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ABSTRACT

As the first step in curriculum development, 12 educational programs for young deaf children with learning disabilities and communication problems were studied in order to identify the atypical deaf child. Subjects were 193 children (age range 6 to 14 years) selected from 12 schools for the deaf in New York State. Data was obtained from school records, a battery of tests, teacher rating scales and check lists, and interviews with admissions personnel. General research findings on cognitive development were that 73% of the children had known exogenous causes for their handicap, that mental retardation was widespread in the sample, that the majority of subjects demonstrated severe to profound hearing impairments, that generalized perceptual and memory deficits existed in the sample, that substantial communication problems existed, that teacher ratings for more than half the sample revealed unsatisfactory emotional, social, and classroom adjustment, that use of instructional materials to improve perceptual and motor skills decreased after children were 10 years of age, and that for the portion of students having nonverbal intelligence scores of 90 or above, performance on perceptual and memory tests was normal. (For related documents, see also EC 041 648-50.) (CB)

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A Survey of Educational Programs for Deaf Children with Special Problems in Communication in New York State

PROJECT CREED

(Cooperative Research Endeavor in Education of the Deaf)

Title I, Elementary & Secondary Education Act
New York State Education Department

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JUDITH A. JONAS

1967

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FINAL REPORT

Project No. JH 30-67-003A

Title I, Elementary and Secondary Education Act

A SURVEY OF EDUCATIONAL PROGRAMS FOR DEAF CHILDREN WITH SPECIAL PROBLEMS IN COMMUNICATION IN NEW YORK STATE.

Joseph Rosenstein
Sheila Lowenbraun
Judith A. Jonas

PROJECT CREED
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December 1966 through August 1967

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Junior High School No. 47: Mr. Thomas Adamo, Miss Florence Blake, Mrs. Margaret Curren, Mrs. Cora Harper, Mrs. Marcia Holder, Mr. Frederick Johannessen, Mr. Gregory Jones, Miss Teresa Reilly, Mr. John Ryan, Mrs. Ruth Sandler and Mrs. Helen Scherer.

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Mill Neck Manor Lutheran School for the Deaf: Miss Adele Brunjes, Miss Joyce Conen, Miss Iris Friedman, Miss Merrily Hochman, Miss Patricia Lennon, Mrs. Judith Melzer and Mrs. Margaret Stohl.

New York School for the Deaf: Miss Patricia Corcoran, Miss Jill Elfenbein, Mr. George Grindley, Miss Margaret Heney, Mrs. Carole Jacobs, Miss Eilene Moore, Miss Nancy Rowley, Miss Harriet Shefranek, Miss Meredith Smith, Mrs. Ruth Sword and Mr. Ernest Tinsmith.

New York State School for the Deaf: Mrs. Nedra Harvey.

Public School No. 158: Mrs. Suzanne Abeloff, Mrs. Delores Broudy, Miss Marion Carberry, Miss Margaret Fuchs, Miss Adrienne Lynne, Miss Ellen Meyers, Miss Joan Meyers, Miss Barbara Mindell, Miss Teresa Revans and Miss Barbara Ribhun.

Rochester School for the Deaf: Mrs. Susan Crossett, Miss Elsie Herden, Mrs. Cornelia Nemeyer, Mr. John Overlander, Miss Janelle Paganini, Miss Susan Weiss and Miss Carol Willis.

St. Francis de Sales School for the Deaf: Sister M. Cletus, Sister Florentina, Sister Maureen Joseph, Sister Rose Mary and Sister F. Solano.

St. Joseph's School for the Deaf: Mrs. Maria Arevalo, Miss Catherine Ball, Miss Rosemary Brandi, Mrs. Kathleen Daniel, Mrs. Lenora Ganzell, Mrs. Debra Goldman, Miss Dorothy Hammitt and Miss Jean Richardson.

St. Mary's School for the Deaf: Sister Charles Garnier, Mr. Russel Martina, Mrs. Carol McSwain and Mrs. Nancy Wanat.

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CHAPTER I

BACKGROUND OF THE STUDY

Background and Need

Schools for the deaf have long recognized that certain children in the school population present educational problems which differ in kind and degree from the speech and language deficits typical of profoundly deaf children. As modern medical techniques for prenatal and neonatal care are improved and techniques of differential diagnosis are perfected, an increase in relative as well as absolute numbers of multiplyhandicapped deaf children may be anticipated. Educators of deaf children will be expected to assume leadership in developing programs which meet the needs of these special children.

Some schools for the deaf have already attempted to meet the needs of these children through the establishment of specialized departments or classes for children exhibiting various atypical language and learning problems. These classes are often designated as classes for children with language disorders, communication problems, aphasia, special learning problems, central hearing problems, etc. While some individual schools have evolved their own diagnostic techniques and educational methodologies for dealing with the atypical deaf child, the problems posed by the lack of uniformity in diagnostic terminology, placement and evaluation procedures, curriculum planning and educational methodology have yet to be resolved and systematic evaluations of given techniques have not been undertaken. Specifically, the composition of that portion of the population of schools for the deaf which is recognized as "special" must be delineated in terms of the diagnostic, etiological, educational, social, emotional, audiological, and behavioral factors which have led to administrative recognition of these children. The factors which dictate the administrative decision to group certain children into special educational units must be determined, and the actual extent to which these units accommodate themselves through curricular modifications, to the special needs of the students, must be explored.

Statement of the Problem

Three specific questions, basic to the discussion of the issues raised above, are to be answered in this study:

1. What is the nature of that portion of the population of the schools for the deaf which is currently recognized as being atypical? How do children in this category differ from expected norms in language develop-

ment, psycholinguistic behavior, learning behavior, motor skills, perceptual abilities, memory, mental capacity, auditory capacity, emotional adjustment, and social development?

2. What are the objective and subjective factors contributing to the administrative decisions to place given children in special units? Are these criteria consistent or do they vary with individual schools?

3. What curricular modifications, special materials or remedial techniques are currently employed by teachers in special classes to compensate for the deficiencies exhibited by these children? Are these techniques and materials specifically appropriate to the deficiencies found?

CHAPTER II

PROCEDURES

Introduction

The project was divided into three portions which corresponded to the three major goals outlined in Chapter I. Descriptive information on the nature of the sample was obtained through the use of: school records; standardized tests reflecting linguistic functioning, memory and perceptual ability; audiometric testing; and teacher ratings. Information on the use of educational materials and techniques was obtained through teacher questionnaires. Information on the factors which contribute to the decision to place deaf children in special classes was obtained through personal interviews with school administrators and school personnel who assumed responsibility for admission and class placement. (See Appendix A for the forms used in the collection of these data)

Subjects

Subjects in this study were drawn from 11 schools for the deaf in New York State, the majority of which were private schools supported by New York State. Six of the participating schools had residential facilities, the remaining five were day schools. For selection of the sample to be included in this study, the subjective criterion of administrative recognition of communication problems, regardless of class placement, was adopted and administrators in each school were asked to submit a list of those children who were considered to have communication problems in addition to those which they would be expected to have on the basis of hearing loss alone.

This subjective criterion for the selection of the sample was based on two considerations. Since one purpose of the project was to obtain information on the nature of that population considered "special" by educators of the deaf, it was felt that the imposition of artificial criteria based on diagnostic or etiological information would seriously impair the usefulness of the study. Since one of the schools sampled did not have provisions for special class placement, it was determined that such placement could not constitute an appropriate criterion for the selection of the sample.

Age range was limited to subjects between ages 6-0 and 14-11. Considerations of time, and the anticipated difficulty of using standardized procedures with very young, severely impaired children, necessitated the adoption of six years as the lower limit of the age range. Adoption of the upper limit of the age range was based on the fact that several of the schools sampled had no provision for children above age 14 and, in others, children beyond that age regularly entered rotating classes and were integrated into regular academic or vocational programs.

For ten of the 11 schools in the study, the sample consisted of each child between the ages of 6-0 and 14-11, who was included on the list of children submitted by the administrator and who was available on the dates of testing. Since considerations of time did not permit the testing of the entire eligible population of one school (a school for aphasic children), the administrator of that school was asked to submit a revised list which sampled that portion of the population having the most severe hearing impairments.

According to information obtained from teacher reports, four schools submitted lists of children drawn from special classes, six schools submitted lists of children drawn from both special classes and integrated regular classes for the deaf, and one school submitted a list of children drawn from integrated classes only.

Testing Procedures

General Testing Procedures. The four nonverbal subtests of the Illinois Test of Psycholinguistic Abilities (ITPA), two subtests of the Grace Arthur Point Scale of Performance, and the Raven's Coloured Progressive Matrices were administered to subjects during two 30 to 45-minute testing sessions. To standardize the procedures for subjects with varying degrees of hearing loss, all tests were administered nonverbally. The Knox Cube Test and subtests of the ITPA were administered in one testing session, the Coloured Progressive Matrices and the Stencil Design Test in the other. Although the order of tests in each testing session was constant, testing sessions were randomized. Therefore, half the population received the Knox Cube Test and subtests of the ITPA first, while the other half received the Coloured Progressive Matrices and the Stencil Design Test first. In the majority of schools a one-or two-hour interim was planned between the two testing sessions so that children were not tested for an hour and a half consecutively. Audiometric testing of the population from nine of the 11 schools in the sample was scheduled in a third testing session.

In all but one school two or more examiners tested simultaneously in one large room at separate desks or tables. The children were seated opposite or adjacent to the examiner in such a way that no child could see any other child. In addition, in two of the schools screens were used to minimize distraction. In one school each examiner had his own testing room. Room arrangements for testing were made by the administrative staff of each school and, of necessity, were limited by considerations of available space.

The Coloured Progressive Matrices. The book form of the Raven's

Coloured Progressive Matrices was employed as a test of perceptual and cognitive abilities. Choice of this instrument was based on the following criteria:

1. Suitability of the test for "people suffering from physical disabilities, aphasia, cerebral palsy or deafness, as well as people who are intellectually subnormal" (Raven, 1958).

2. Availability of standardized procedures which could be adapted for nonverbal administration.

Since it was desirable to obtain a wide dispersion of scores the revised book form of the test, which consists of three sets (A, Ab and B) of twelve designs each, was used. Percentile norms on this edition of the test were applicable only through chronological age 11-0 in a normal population. However, it was hypothesized that since the sample represented a multiply handicapped population, the children's scores would fall within the score range provided.[1]

Raw scores on the three subtests and on the entire test, consisting of the number of patterns correctly completed, were tabulated for use in data analysis.

The adaptation of the testing procedures for nonverbal administration is described in Appendix B, p. 105.

The Stencil Design Test. The Stencil Design subtest of the Grace Arthur Point Scale of Performance is a measure of perceptual ability which does not involve a memory factor. This test consists of a series of 20 colored design cards and 18 colored cards to be used in reproducing the designs. Of the 18 colored ones, six are solid cards and 12 are symmetrical stencils. The stimulus design cards are presented to the subject in order of difficulty.

Raw scores on the test represent the number of designs correctly reproduced within a 4-minute time limit. Ceiling is reached when three consecutive failures are recorded. Age norms of the test range from 4-0 to 15-0 years. Scores were converted to age norm equivalents for data analysis.

The adaptation of the testing procedures for nonverbal administration is described in Appendix B, p. 106.

The Knox Cube Test. Since it was hypothesized that children in the sample would exhibit deficiencies in specific memory functions, the Knox Cube subtest of the Grace Arthur Point Scale of Performance was included in the test battery. This test of memory for movement patterns requires a subject to remember and reproduce progressively more difficult sequences of taps on wooden cubes.

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[1] In fact, only two subjects in the sample (Total N=193) responded correctly to all items in the test.

There is no basal age for this task. Ceiling is reached when three consecutive failures are recorded. The entire test is administered twice, once at the beginning of a testing session and once at its termination.

Scores are recorded as the average number of sequences correctly reproduced on the two trials. Age norms on the test range from 4-5 years to 15-5 years. Scores were tabulated as age norm equivalents for use in data analysis.

The Illinois Test of Psycholinguistic Abilities. Since members of the population were presumed to be deficient in linguistic behavior, the four nonverbal subtests of the Illinois Test of Psycholinguistic Abilities were administered in order to obtain an objective nonverbal measure of certain factors hypothesized to relate to psycholinguistic behavior. Since the sample was composed of subjects who had varying degrees of hearing loss as well as additional communication problems, those subtests of the ITPA which explore the auditory-vocal channel of communication through the presentation of verbal items were deemed unsuitable for use even at the lowest level. Instead, a subjective measure of verbal behavior was obtained through the use of teacher questionnaires.

The Visual Decoding subtest (VIS.D) investigates "the ability to comprehend pictures" by requiring the subject to select "from among a set of pictures, the one which is most nearly identical, on a meaningful basis, to a previously exposed picture" (McCarthy and Kirk, 1961).

The Visual Motor Sequencing subtest (VMS) investigates the ability of a subject to remember and reproduce sequences of forms presented visually, thus providing a measure of short-term memory for visual patterns.

The Visual Motor Association subtest (VMA) assesses "the ability to relate meaningful visual symbols" (McCarthy and Kirk, 1961). The test "requires the subject to select from among a set of pictures the one which meaningfully relates to a given stimulus picture" (McCarthy and Kirk, 1961).

The Motor Encoding subtest (ME) requires the subject to demonstrate the use of real or pictured objects through gesture or pantomime.

Although age norms for this test did not correspond to the entire range of chronological ages in the sample it was felt that, due to the severity of handicaps in this population, the test would be suitable for administration to all age levels in the sample.[1] Raw scores on each subtest

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1. In fact no subject attained the maximum possible standard score on any subtest.

were tabulated and converted to standard scores as indicated in the manual. For subjects above the age ranges listed in the conversion tables, scores were converted to standard scores on the basis of the highest age range listed in the tables.

The modification of procedures for nonverbal administration of these subtests is described in Appendix B, p. 106.

Audiometric Testing. In every school but one all testing was conducted in sound-treated rooms. In the one exception the room used was a quiet one situated far from the main traffic of school activities.

All testing was conducted with an Amplivox, Model 83 audiometer calibrated to 1964 ISO standards. Calibration checks in January and June indicated that the audiometer was within calibration specifications at these times.

Each child was tested individually, by the same audiologist, for each ear at frequencies of 500, 1000 and 2000 cycles per second. A running numerical tabulation of children was maintained throughout the project test period, with the right ear being tested first for odd numbered children and the left ear first for even numbered ones. Every fifteenth child had both ears tested with each phone as an informal check of reliability of procedure as well as a check of earphone stability. None but acceptable differences were ever detected by these informal checks of earphones.

Prior to the actual testing each child was required to accomplish a conditioning task, essentially a vibrotactile technique of stimulation to a criterion of three out of five trials. Each trial consisted of presentation of a 500 cps tone through a bone vibrator placed in the child's hand. The child was required to drop an object into a box (older children) or place a ring on a peg (younger children) when he responded to the stimulus.

Since no verbal instructions were given to the child, the instructor frequently demonstrated the task after the first tonal presentation. However, most children, as a result of repeated testing in the past, needed no additional stimulation. All but one child met the criterion of completing the task in three of five trials. This child could not be conditioned after ten minutes of trials.

Following the conditioning headphones were placed on the child and testing was conducted using the same manner of response as had been used in conditioning. The lowest frequency was always tested first. Threshold was determined as the faintest level at which two out of three tonal presentations elicited positive responses.

It should be noted that the time spent with the children in this study differed greatly from the time that one might have spent with them in a standard clinical setting. For the sake of control and uniformity, however, subjective clinical benefits (e.g., further testing and the use of audiometric and other techniques) were not extended to any of the children, and only the conditioned responses mentioned above were recorded.

Within the time allotted for the audiometric testing, and taking into account the composition of the groups tested, the vibrotactile technique was considered a reliable and effective conditioning procedure.

Teacher Rating Scales

Scales for Rating Language Development. A subjective measure of language development was adopted for use inasmuch as no standardized objective test was found which would adequately measure the development of the ability to use oral language for communication. Since it was felt that brief interviews with children in the sample would not elicit the requisite information on the subject's language development, a person deemed to be familiar with the child's language functioning, his teacher, was used as informant.

The following criteria were used in the selection of a subjective measure of language functioning.

1. The measure must have the ability to clearly differentiate between receptive and expressive language capacities.
2. The measure must be capable of assessing a full range of language abilities, from absence of oral language to normal language competence.
3. The measure must be appropriate to deaf children.
4. The measure must indicate discrete steps in the development of language.
5. The measure must permit independent use in the written form by teachers.

The Watson and Pickles' Scales for Rating the Development of the Capacity to Understand Speech and for Rating the Development of the Capacity to Talk were selected as best meeting the criteria described above (Watson & Pickles, 1963).

Since these scales were designed for use by parents of deaf children, minor modifications were made which permitted their use by teachers. Specifically, in those places where the family was referred to in the original scales, the classroom situation was substituted. See Appendix A, P. 80 for the text of the revised scales.

A third scale, similar in construction to the Expressive and Receptive Rating Scales, was devised by the project staff. This scale indicates ten steps in the development of the Capacity to Benefit from the Use of Audition in Language Learnings. See Appendix A, p. 82 for the text of this scale.

Behavior Check List. To obtain an evaluation of the behavioral stability of the sample, a questionnaire was constructed which permitted the subjects' classroom teachers to provide information on the behavior problems exhibited by this population. Preliminary to the construction of the questionnaires, the following procedures were followed to insure the inclusion of adequate behavioral descriptions.

Eighteen teachers of children with special learning problems were asked to submit individual written descriptions of children in their classes. One-hundred-six descriptions were obtained. All descriptive words and phrases used by the teachers were tabulated. Four members of the Research Department of the Lexington School for the Deaf independently grouped those phrases which they felt described the same general behaviors. Thirty-five groupings of words or phrases, each describing a negative behavior trait, were obtained. As a final step the project staff selected thirty-five words or phrases, one from each of the groupings, representing different behavioral traits.

During the construction of the questionnaire, the thirty-five words or phrases which had been selected were grouped into three broad categories, as being generally descriptive of emotional instability (12 phrases), socially unacceptable behavior (13 phrases) and unacceptable classroom behavior (10 phrases). Each category list was presented on a separate page of the questionnaire.

At the top of each page teachers were asked to rate each child as "Generally Satisfactory" or "Unsatisfactory" in a given area. If a child was rated Unsatisfactory the teacher was asked to check, from the list of descriptive phrases provided, those characteristics which contributed to this conclusion. At the bottom of each list space was provided for the teacher to add any descriptions of inappropriate behaviors which were not included in the list but which he felt were applicable to the child (see Appendix A, p. 84). Appended to this questionnaire was a fourth section which required the teacher to rate each child as "Satisfactory" or "Unsatisfactory" in motor skills.

Teacher Questionnaires - Materials and Techniques. To determine the nature of the materials and techniques used by teachers of children with specific communication problems, a questionnaire was submitted to the teacher of each child in the sample. The teacher was instructed to list all the materials and techniques which he currently employed with the child in each of nine categories: 1) commercial reading series; 2) commercial mathematics series; 3) materials other than texts for use in teaching arithmetic; 4) perceptual training materials and techniques;

5) materials and techniques for teaching gross motor skills; 6) materials and techniques for teaching fine motor skills; 7) techniques for improving tactile perception; 8) techniques which may form the basis of a program of perceptual motor training, and; 9) recognized methods of teaching language skills.

Since many different materials and techniques are available for use in several of these areas, the teacher was provided with an illustrative list of possible activities or techniques in these areas. The teacher was requested to check those which were used during the current school year and was encouraged to include any activities or techniques which were not listed. In addition, the teacher was asked to indicate the effectiveness of each activity used with the subject by grading the activity on a 10-mm scale (see Appendix A, p. 88).

In order to obtain information on the nature of the classes in which the children in the sample were placed, each teacher whose pupil was included in the study was asked to indicate, on a sheet appended to the questionnaire, the number of students in the class, the age range of the pupils, whether the class was considered by the teacher to consist of only special children, and the physical arrangement of the classroom.

Interview

Information related to the second goal of this study (see Chapter I, p. 2) was obtained through a structured interview (see Appendix A, p. 97) with the person responsible for the placement of special children. The interview was structured in such a way that information obtained from several schools, each having different facilities and different kinds of procedures regarding special class placement, could be compared. Within the framework provided by the interviewer, the interviewee was encouraged to elaborate or clarify his responses.

The interview was planned so that it would elicit the following information, where applicable, from each school:

Nature of the Special Classes. Into what kinds of classes are those children placed who are recognized as being special? Are the classes homogeneous or heterogeneous with regard to the type of disorder the child seems to exhibit?

Identification of the Special Child. By whom is the special child identified? Does the school have its own intake staff and, if so, what is its composition? Does the school rely on referral agencies for its information?

Placement Decision. When is the decision made to place a child in a special class? What factors contribute to this decision?

Transfer to a Special Class. What factors contribute to the decision to transfer a child from a regular class to a special class? On what basis and by whom is the decision made?

Transfer from a Special Class. Does the school provide for transfer out of the special class? If so, on what basis and to what kind of school or class does the child go?

CHAPTER III

DESCRIPTION OF THE POPULATION

Introduction

Information obtained from school records formed the basis for a statistical description of subjects included in the sample. While it was initially hoped to acquire, through recorded information, subjective evaluations of the subjects as well as objective information on the nature of the sample, this data proved impossible to extract from the school records as currently kept. At best, fragmentary information from various, sometimes unspecified, sources was available on one or more aspects of the subject's behavior. In other cases the extent of recorded information was limited to an initial listing of the apparent etiology and diagnosis, an IQ score and a pure tone audiogram.

Age and Sex Distribution

The sample was comprised of 193 subjects from 11 schools for the deaf in New York State. Of the total sample, 124 were males and 69 were females. The number of subjects contributed by each school ranged from 2 to 48. In 8 of the 11 schools, more males than females were included in the sample. In 2 schools, an equal number of males and females was included, and in only one school more females than males were included (see Table 1, p. 15). In the total population the number of males significantly exceeded the number of females (significant beyond .001), despite the fact that sex was not stated by any administrator to be a relevant variable in the selection of the sample.

The sample included children from 6-0 through 14-11 years of age at the time of testing, with a mean age of 10.2 years. The mean number of children in each year interval was 21.4. At ages 11 and 14 significant variation in the number of children included was found. That is, there were significantly more 11-year olds in the population (31) and significantly fewer 14-year olds (14) than would be expected on the basis of chance alone (see Table 2, p. 16).

Etiological Distribution

Information on etiology was available in the school records of 148 subjects. This information was either recorded as part of an initial intake procedure or took the form of copied reports gathered from other agencies (hospitals and clinics) by the schools. 25.7% of the available records listed the cause of the handicap as "congenital-unknown." 73.0% of the subjects had known exogenous causes, with maternal rubella (12.8%) and prematurity (12.1%) accounting for the largest proportion of these.

9.1% of the cases had more than one cause for the disability reported by a single examining agency. That is, etiology was listed as prematurity and jaundice, prematurity and anoxia, etc. Only 1.3% of available records listed heredity as a probable cause of deafness. The breakdown of the sample by etiology is shown in Table 3, p. 17.

Diagnosis

Of the total sample 167 subjects had available school records which recorded diagnosis, either determined by the school upon admission or collected by the school from referral agencies. The greatest portion of these diagnoses (47.3%) were dealt with in two parts; one giving an estimation of the amount of hearing loss, the other attaching one or more labels indicative of additional perceptual, conceptual or motor impairments. Twenty-eight and seven-tenths per cent of the diagnoses indicated the presence of some degree of hearing loss without mentioning the presence of secondary handicaps, and 23.9% indicated the presence of presumed central nervous system disorders without reference to degree of hearing loss. In all, more than 25 different diagnoses were listed. With the exception of "deaf only" (27.5%) no single diagnosis was applied to more than 10% of the population.

The descriptive terminology employed in reporting diagnoses is vague. Overlapping of categories, as in the lack of objective distinction among the terms "aphasia" (unspecified), "expressive aphasia", "receptive aphasia" and "central nervous system dysfunction", negates the validity of differential diagnosis as a variable in determining the significance of observed differences in behavior or test performance. Further, terminology appeared to be idiosyncratic to particular examining agencies with, for example, 75% of the diagnoses of receptive aphasia coming from a single referral agency. It is significant that the great majority of records contained no information on the neurological or psychological findings on which the diagnosis was based.

The incongruity of the diagnoses with other available information is most striking in the area of mental retardation. While 25 subjects in the sample have reported IQ scores below 70, only 14 subjects are diagnosed as mentally retarded. Conversely, of the 14 subjects diagnosed as retarded, 6 have IQ scores listed in the records as being 71 or above, with 3 of these falling within normal limits (90-110). Thus, of 25 subjects with IQ scores below 70, only 8 (32.0%) were diagnosed as retarded, while 3 (21.4%) of the subjects who were diagnosed as retarded scored within normal limits on standardized tests.

The range of diagnoses obtained is reported in Table 4, p. 18. Information on the state of the hearing mechanism is given on the horizontal axis, the vertical axis lists the other conditions reported. The number and percent of the sample falling into each joint category is reported in this table, as are the total number and percentage of subjects showing any specific impairment. It must be emphasized that this table represents a condensation and categorization of diagnostic information which was often much more complex than indicated. By a single referral agency one diagnosis of "motor aphasia, deafness, bilateral auditory aphasia, acquired emotional overlay, childhood schizophrenia, central nervous system impairment and mild cerebral palsy" was condensed in this report to "deaf - more than one".

Intelligence

The most recent IQ score available for subjects in the sample was derived from school records. Of the total sample, 177 had either numerical IQ scores or verbal descriptions of intelligence recorded. For the majority of subjects (54.8%), the Wechsler Intelligence Scale for Children, Performance Scale (WISC-P), was indicated as the testing instrument, with lesser proportions of the population using a variety of other non-verbal tests. The tests used are reported in Table 5, p. 19. For 24 subjects, an IQ score was given but no test was indicated.

The numerical IQ scores obtained ranged from 31 to 135, with the median score falling between 71 and 90 and the mean IQ being 87.6. The mean IQ for those subjects taking the WISC-P is 89.7. There is no significant difference between mean score on the WISC-P and the mean of the available IQ scores on all tests used. Figure 1, p. 20. shows the percentage of subjects falling into each of 8 IQ score ranges. It will be noted that 52.9% of the subjects have IQ's which are 90 or below, with 14% of the population having IQ scores which fall into the moderately to severely retarded range (70 or below). By contrast, only 9.4% of the sample attained IQ scores which are above normal range (greater than 110).

Audiometric Testing

Pure tone audiometric tests were administered to 138 subjects.[1] The hearing levels of subjects ranged from normal hearing (0 dB ISO) to no response at 110 dB, maximum output of the audiometer. Figure 2, p. 21, shows the percentage of subjects falling in each of six categories of hearing impairment. It can be seen that the greatest proportion (44.21%) of the subjects fall within the range 81-100 dB ISO, the range usually considered to be profoundly deaf. There is, however, a sizeable proportion of subjects whose hearing ranges from 61-80 dB (24.61%) and another group whose hearing is well within normal limits, 0-20 dB (6.51%).

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[1] Due to consideration of time, subjects in two schools were not tested.

Table 1. Sex Distribution of Subjects by School

School Number	Males Number	Males %	Females Number	Females %	Total Number	Total %
1	28	22.5	20	28.9	48	24.8
2*	20	16.1	16	23.1	36	18.6
3	18	14.5	6	8.6	24	12.4
4	14	11.2	3	4.3	17	8.8
5	10	8.0	3	4.3	13	6.7
6	9	7.2	11	15.9	20	10.3
7	9	7.2	4	5.7	13	6.7
8	7	5.6	2	2.8	9	4.6
9	5	4.0	0	0.0	5	2.5
10	3	2.4	3	4.3	6	3.1
11	1	0.8	1	1.4	2	1.0
Total	124	64.3	69	35.7	193	100.0

* **Figures represent a sample of the total eligible population from this school.**

Table 2. Age Distribution of the Subjects by School.

School Number	Ages																		Total	
	6-0 to 6-11		7-11		8-11		9-11		10-11		11-11		12-11		13-11		14-11			
	N*	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
1	11	57.8	11	50.0	5	18.5	2	13.3	7	28.0	4	12.9	6	26.0	2	11.7			48	24.8
2					3	11.1	4	26.6	9	36.0	9	29.0	6	26.0	3	17.6	2	14.2	36	18.6
3	1	5.2	3	13.6	5	18.5	2	13.3	3	12.0	2	6.4	1	4.3	3	17.6	4	28.5	24	12.4
4	1	5.2					2	13.3			4	12.9	4	17.3	4	23.5	2	14.2	17	8.8
5					1	3.7	1	6.6			4	12.9	1	4.3	3	17.6	3	21.4	13	6.7
6	1	5.2	3	13.6	3	11.1	2	13.3	1	4.0	4	12.9	3	13.0	1	5.8	2	14.2	20	10.3
7	1	5.2	2	9.1	1	3.7	1	6.6	4	16.0	1	3.2	1	4.3	1	5.8	1	7.1	13	6.7
8	1	5.2	3	13.6	4	14.8					1	3.2							9	4.7
9					3	11.1			1	4.0	1	3.2							5	2.5
10	1	5.2			2	7.4	1	6.6			1	3.2	1	4.3					6	3.1
11	2	10.5																	2	1.0
Total	19	9.84	22	11.39	27	13.98	15	7.77	25	13.47	31	16.06**	23	11.91	17	8.80	14**	7.25	193	100

* N = Number

** Significant difference beyond .01

Table 3. Number and Percentage of Subjects With Given Etiologies (Information from School Records).

Etiology	Number	Percentage
Congenital Unknown	38	35.7
Rubella	19	12.8
Prematurity	18	12.1
More than one Cause	15	10.1
Anoxia	10	6.7
Meningitis	10	6.7
Rh Incompatability	6	4.0
Virus	5	3.3
High Fever	4	2.7
Birth Complications	4	2.7
Toxemia	3	2.0
Prenancy Complications	3	2.0
Other	3	2.0
Heredity	2	1.3
Encephalitis	2	1.3
Fall	2	1.3
Jaundice	2	1.3
Convulsions	2	1.3
Total Available Records	148	

Table 4. Number and Percentage of Subjects with Given Diagnoses (Information from School Records).

	Hearing Status									
	Normal Hearing		Hard-of-Hearing		Deaf		No Information		Total	
Diagnosis	N*	%	N	%	N	%	N	%	N	%
Asphasia (Unspecified)	1	.59	4	3.39	12	7.18	15	8.98	32	19.16
Expressive Aphasia					1	.59	2	1.19	3	1.80
Receptive Aphasia			1	.59	7	4.19	8	4.79	16	9.58
Central Nervous System Disorder			2	1.19	15	8.98	6	3.59	23	13.77
Cerebral Palsy					5	2.99			5	2.99
Emotional Disturbance	1	.59							1	.59
Mental Retardation			2	1.19	7	4.19	1	.59	10	5.99
More than One	1	.59	3	1.80	7	4.19	7	4.19	18	10.77
Other			2	1.19	8	4.79	1	.59	11	6.59
Hearing Loss Only			2	1.19	46	27.54			48	28.74
Total Available Records	3	1.79	16	9.58	108	64.67	40	23.95	167	

*N=Number

Table 5. Type of Intelligence Test Used (Information from School Records).

IQ Test	Number	Percentage
Wechsler Intelligence Scale for Children	97	54.8
No Information	24	13.5
Leiter	20	11.3
Hiskey-Nebraska	10	5.6
Otis Quick Scoring	7	3.9
Merrill-Palmer	4	2.3
Chicago Non-Verbal	3	1.7
Stanford Binet	3	1.7
Grace Arthur - Point Scale of Performance	2	1.1
Raven's Coloured Progressive Matrices	2	1.1
Ontario School Ability Examination	2	1.1
Goodenough Draw-A-Man	1	.6
Columbia Mental Maturity Scale	1	.6
Observation	1	.6
Total Available Records	177	

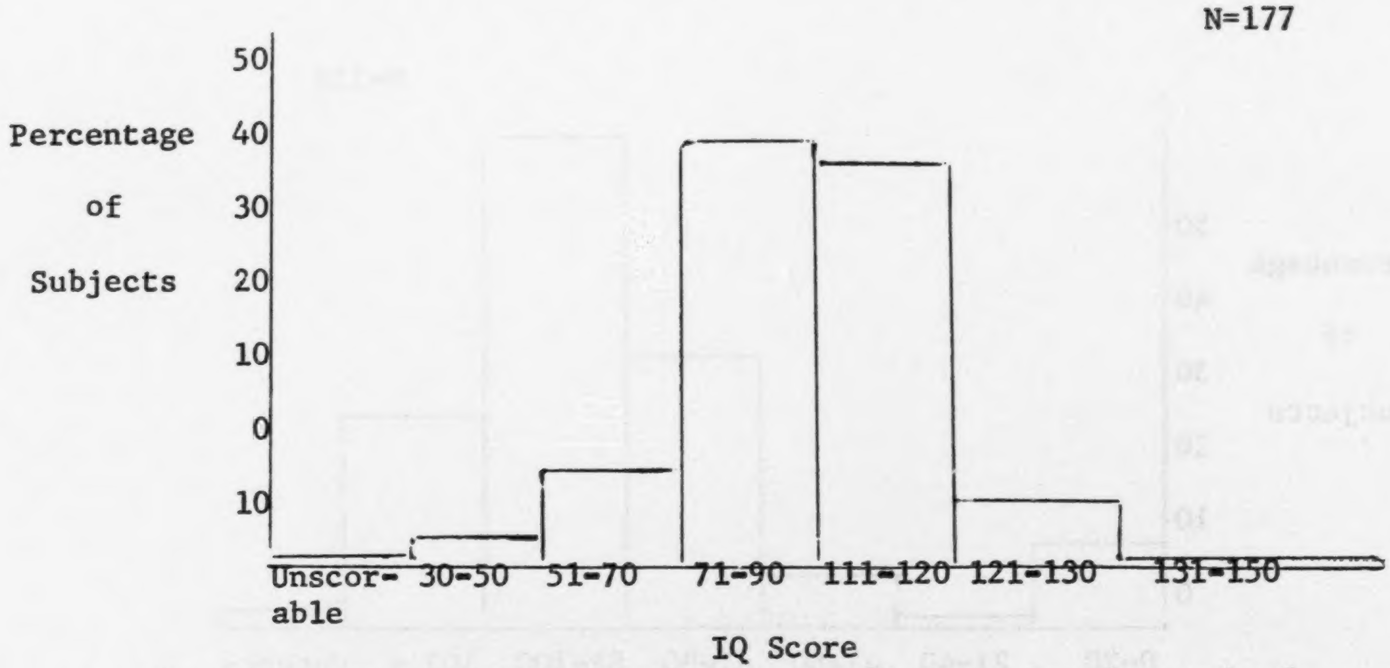

Figure 1. IQ Distribution of Subjects (Information from school records).

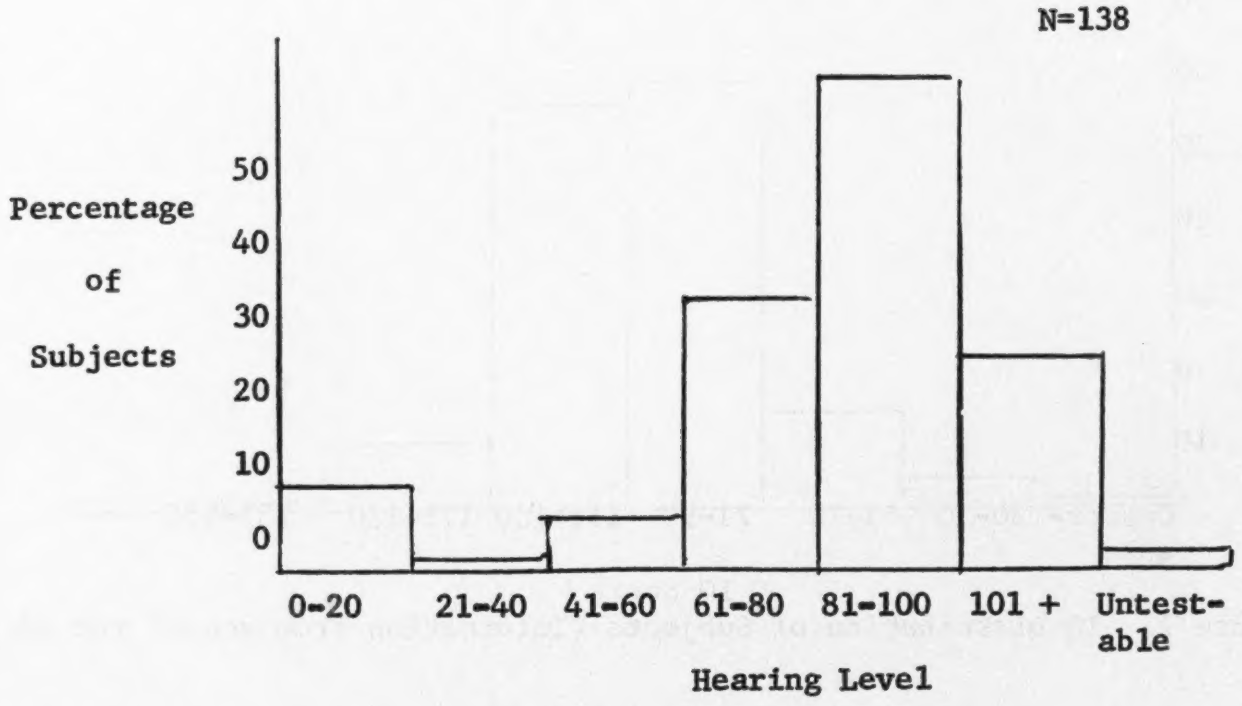

Figure 2. Hearing Level Distribution of Subjects

CHAPTER IV

RESULTS - ALL SUBJECTS

Results of Testing

Raven's Coloured Progressive Matrices. The Raven's Coloured Matrices were administered to all subjects in the sample. Since the subjects in the sample had a mean age of 10.29, the expected mean raw score on the test was 25, this being the score indicated in the manual as falling in the 50th percentile for children between ages 10 and 10.5. The actual mean score obtained was 20.31 for the total population. This is significantly less than the expected value (significant beyond .001), and indicates the presence of a generalized perceptual deficit in the population.

As a measure of internal consistency, correlations between the three subjects of the test and the entire test were obtained. Intercorrelations between scores on the three sets (A, Ab and B) and the entire test score, range from .6053 to .9118. Intercorrelations are presented in Table 6, p. 33.

Correlations were obtained between scores on the Coloured Progressive Matrices and scores on the Stencil Design Test, the Knox Cube Test, and subtests of the ITPA. These scores were also correlated with IQ scores, as reported in the records, and Chronological Age. These intercorrelations are presented in Appendix C, Table 1, p. 108.

As would be expected in a developmental test, scores correlated positively with both chronological age and other developmental tasks, such as the subtests of the ITPA and the Grace Arthur Point Scale. The highest correlation (.6742) was obtained with the Stencil Design Test, the only other test in the battery which specifically taps a specific perceptual ability.

The Stencil Design Test. The Stencil Design Test was administered to 185 subjects. Scores on this test are reported as age in months. The expected mean score, which is equal to the mean chronological age (in months) for all subjects taking this test, was 124.36. The actual mean score attained by the sample was 99.34, which is significantly different from the expected value (significant beyond .001). Performance on this task correlated highly with scores on the Coloured Progressive Matrices (see Appendix C, Table 1, p. 108) confirming the conclusion that a generalized visual perceptual deficit exists in this population.

The Knox Cube Test. The Knox Cube Test was administered to 192 subjects. Scores on this test are reported as age equivalents. The expected mean score on this test was 123.03, which represents the mean chronological age in months for all subjects taking the test. The actual mean score obtained was 102.08, which is significantly different from the expected value (significant beyond .001). The poor performance on this task indicates the existence of a generalized memory deficit in the population. Scores on the Knox Cube Test correlated significantly with receptive and expressive language ratings, chronological age, and scores on all other tests in the battery (see Appendix C, Table 1, p. 108).

The Illinois Test of Psycholinguistic Abilities. Four nonverbal subtests of the Illinois Test of Psycholinguistic Abilities were administered to 193 subjects. Raw scores on each subtest were converted to standard scores in accordance with instructions in the manual. All subjects with chronological ages above those listed in the conversion tables were treated as though they fell in the highest age range provided. This procedure introduces a systematic positive bias into all results. Therefore, the results reported are higher than those which would have been achieved by the subjects, had they been compared with a normative population of similar age range. Since the subtests tap different functions, results on each will be presented separately in the following sections.

a. _Visual Decoding_

Standard scores on the Visual Decoding subtest ranged from -3.00 to 1.83, with a mean score of -.806 and a standard deviation of 1.14. This score is significantly different from the expected mean of 0.0. Figure 3, p. 49, depicts the percentage of the total population falling into each of eight score ranges. It will be noted that 78.2% of the population have standard scores of 0.0 or below, with 41.95% of the population having negative standard scores which fall more than one standard deviation from the mean, and 15.54% of the population attaining negative standard scores which negatively depart from the expected mean by more than two standard deviations. It must again be emphasized that the results obtained are positively biased and actual scores are somewhat lower than reported.

b. _Motor Encoding_

Scores on the Motor Encoding subtest ranged from -3.00 to 2.05, with a mean of -.32 and a standard deviation of 1.09. This mean differs significantly from the expected mean of 0.0. The distribution of scores is shown in Figure 4, p. 50. The distribution is fairly symmetrical, with 73.59% of the scores falling within one standard deviation of the expected mean.

c. Visual Motor Sequencing

Standard scores on the Visual Motor Sequencing subtest ranged from -3.00 to 1.32 with a mean standard score of -1.36 and a standard deviation of .94. This mean is significantly below the expected mean of 0.0. Figure 5, p. 51, depicts the distribution of standard scores on this subtest. It will be noted that 90.39% of the population obtained standard scores of 0.0 or less, indicating an extreme negative divergence from the expected distribution. 68.40% of the scores deviated negatively from the expected mean by more than one standard deviation, and 23.83% deviated from the expected value by two standard deviations or more. Again, it must be noted that these scores are positively biased and actual results are even lower than indicated.

d. Visual Motor Association

Standard scores on the Visual Motor Association subtest ranged from -3.00 to 1.87 with a mean of -.71 and a standard deviation of 1.15. The mean score is significantly different from the expected mean of 0.0. Figure 6, p. 51, depicts the percentage of scores falling into each of eight ranges. It will be noted that 69.41% of the subjects scored at or below the expected mean of 0.0, with 37.29% scoring more than one standard deviation from the mean, and 18.13% scoring two standard deviations or more below the expected mean. Table 7, p. 33, shows the mean, standard deviation and t value of scores on each of the four subtests. Intercorrelations among the subtests of the ITPA and between the subtests and other tests in the battery are presented in Appendix C, Table 1, p. 108.

Teacher Rating Scales

Language Rating Scales. Subjective ratings by teachers on three facets of linguistic behavior (receptive language, expressive language and use of audition) were obtained for 192 subjects. Receptive language ratings ranged from Level 1, "Gives little or no attention to speech," to Level 10, "Understands freely conversation of familiar people and strangers ... wide range of vocabulary, now uncountable." The distribution of ratings was heavily skewed, with the median score falling between Levels 7 and 8 and the mode at Level 9. Table 8, p. 34, shows the number and percentage of children in each age range and their level of receptive language development, while Figure 7, p. 52, depicts the percentage of the total sample at each of the ten levels.

Oral expressive language ratings ranged from Level 1, "Does not vocalize," to Level 10, "Language almost like normal children of similar age...." The distribution of ratings in this area shows a very different pattern from that of receptive language (see Figure 8, p. 52). The distribution is fairly uniform over all levels, with a moderate peak at Level 2, "Vocalizes to a limited extent." The mode is at Level 2, and the median score at Level 5, "Talks fairly freely in single words." As might be expected, expressive language is at a considerably lower level than receptive language in the overall population. Table 9, p. 36, shows the number and percentage of children in each age range and their expressive level of language development.

The auditory scale measures the ability of the subjects to benefit from the use of audition in language learning (see Figure 9, p. 53.) The distribution of ratings on this scale is bimodal, with a moderate peak at Level 1, "No attention or response to environmental sounds," and a more pronounced peak at Level 8, "Comprehension of speech through audition in most situations with amplification." The mode is at Level 8, and the median rating falls at Level 7, "Beginning to comprehend speech through audition in context only...." Such a bimodal distribution is expected considering the extreme variation in hearing level in the population which ranges from normal hearing to no response to pure tones at limits of the audiometer. Table 10, p. 38, shows the number and percentage of subjects in each age range at each of the ten auditory language levels. Figure 9, p. 53, depicts the percentage of the total population falling at each level.

For purposes of data analysis, ratings on the three scales were treated as discrete steps along a linear continuum. Means and standard deviations were computed and the scores were correlated with selected variables. T tests revealed that ratings on receptive language were significantly higher than ratings on the expressive or auditory scales (see Table 11, p. 40). Intercorrelations between ratings on the three scales were highly significant, with the highest correlation being found between receptive and expressive language ratings (see Table 12, p. 40).

Ratings on the three language scales were correlated with chronological age and with selected objective measures of perceptual ability, memory, and hearing level. Scores on the Knox Cube Test and the Visual Motor

Sequencing subtest of the ITPA were considered to be indices of memory function. Scores on the Coloured Progressive Matrices and the Stencil Design test were considered to be indices of perceptual ability. Table 13, p. 41, shows the correlations between the three language scales and selected objective measures.

Receptive language correlates significantly only with those tests which tap a memory function (Knox Cube and Visual Motor Sequencing) and does not vary significantly with either chronological age, visual perceptual abilities or hearing level. Expressive ability is seen as a more complex function, correlating significantly with memory functions, perceptual abilities and[1] hearing level, but does not vary significantly with chronological age.

The ability to benefit from the use of audition is seen to vary significantly only with degree of hearing loss, and does not correlate significantly with either chronological age, perceptual ability or memory. It is important to note that, although the three facets of language ability are closely intercorrelated, each apparently is related to and dependent upon different sets of factors for successful development.

Behavior Check List. Of the 193 behavior questionnaires, 188 were returned. One hundred twenty-two males and 66 females were rated by their teachers as "Satisfactory" or "Unsatisfactory" in each of three areas: Emotional Stability, Social Acceptability and Classroom Behavior. The responses were tabulated according to the number and percent of males and females in each of three age ranges (6-8, 9-11, 12-14) who were rated satisfactory on any one of the three scales and on all of the three scales (see Table 14, p. 42). T tests revealed that no significant differences occurred, in any given area, between age ranges. That is, despite differences in age, the percentage of children rated satisfactory did not vary significantly. The percentage of subjects, by age level and sex, attaining satisfactory rarings represents, in all but two cases, less than 50% of the sample. In each category, then, more than 50% of the total population was considered by their teachers to exhibit behavior that was unsatisfactory. Furthermore, the percentage of children who were rated satisfactory in all three areas, ranged from a low of 9.1% for the 12 to 14-year old females, to a high of 26.8% for the 12 to 14-year old males, with more than 80% of the total population exhibiting unsatisfactory behavior in at least one of the three areas. In Table 15, p. 43, the breakdown is presented by age and sex, of those who were rated by their teachers as satisfactory in each possible combination of two areas: Emotional and Social, Emotional

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1. These results may be compared with the results of testing of those subjects of normal intelligence, as reported in Chapter V.

and Classroom, and Social and Classroom behaviors.

In Table 16, p. 44, is shown the percentage of children who exhibited characteristics of the "Strauss Syndrome." The following descriptive phrases were included in the list as examples of unacceptable classroom behavior and were considered by the project staff to be representative examples of this syndrome: a) hyperactive; b) cannot sustain attention; c) extremely limited memory; d) perseverative; and, e) needs much structure to function effectively, disorganized. More than 50% of both the total population and of the subjects in each age range displayed one or more of these characteristics. The percentage of children exhibiting these traits decreases slightly with increasing chronological age. However, no significant differences were found to exist between age ranges.

Materials and Techniques

a. Materials and Techniques for Teaching Language

Teachers were asked to indicate the method or methods of teaching language that were used with each pupil. Four of the most commonly used methods for teaching deaf and brain injured children were listed (Fitzgerald Key, McGinnis, Natural Language, and Hortense Barry) and extra space was provided for the teacher to list any other methods that were used. Over one-third of the responses indicated that two or more methods were employed with a single pupil. The two most frequently chosen methods were the Fitzgerald Key and Natural Language, used with 62.6% and 72.0% of the total population respectively.

The McGinnis Method was used with 25.9% of the population, and Hortense Barry's method was used with 12.9% (see Table 17, p. 45). It may be noted that the two most common methods used by teachers in teaching language are those designed for use with deaf children, whereas the two methods designed for special children are used with lesser frequency. Further, although the use of the Fitzgerald Key and Natural Language are used with high percentages of the children at all the age levels, the McGinnis method is used less with increasing age.

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1. For a further breakdown of each of the three behavior scales, see Appendix E, Tables 1, 2 and 3

Each teacher rated the effectiveness of the language method used with each child on a continuous 10-mm. scale. No significant differences were found between the effectiveness of any of the methods used, as rated by the teachers. Other methods and materials reported for teaching language are shown in Appendix D, p. 116.

b. Materials and Techniques for Teaching Reading

For children with whom a reading series was utilized, the grade level indicated was tabulated for each of three age ranges, 6-8, 9-11 and 12-14. The levels, as reported by the teachers, range from Reading Readiness through fifth grade. As expected, the majority (55.2%) of the youngest children (6-8) use pre-primer and primer books. The largest percentage of the 9 to 11-year olds (20.2%) use books at level 1, while the largest percentage of the 12 to 14-year olds use books at level 2. Although the reading level of the series does increase with age, it can be seen, from Table 18, p. 46, that this increase is not substantial.

A large proportion of responses indicated that no commercial reading series was utilized. This response was indicated for 26.8% of the 6 to 8-year olds, 17.3% of the 9 to 11-year olds, and 21.1% of the 12 to 14-year olds.

c. Arithmetic Texts and Materials

Standard arithmetic textbooks were used by 71.6% of the subjects aged 6-8, 78.9% of the subjects aged 9-11, and 82% of the subjects aged 12-14. Textbooks ranged from arithmetic readiness through level 6 (see Table 19, p. 47). At the two upper age ranges, substantial numbers of children were reported as using two or more textbooks at different grade levels. It may be assumed that this represents an increasing dichotomy between the ability to do computation and the ability to understand arithmetic problems.

In addition to standard textbooks, substantial proportions of teachers of children in the youngest age range used one or more concrete methods of teaching arithmetic concepts (see Table 20, p. 48). Use of these methods, which are primarily designed for the first stages of arithmetic learning, decreased sharply with increasing chronological age. See Appendix D, p. 117 for a list of additional materials used in teaching arithmetic.

d. Fine and Gross Motor Activities

A wide variety of activities which aid in the development of fine and gross motor skills were employed with children in the sample. The numbers and percentages of children in each of three age ranges reported as using activities which develop fine and gross motor skills are reported in Appendix D,pp. 109, 111. It can be seen that, while some activities are used at all age levels, the reported use of specific techniques for enhancing motor skills decreases sharply with increasing chronological age. This decrease may be partially accounted for by the fact that as children grow older, physical education departments, rather than the classroom teacher, assume responsibility for the development of motor skills. However, it must be noted that teacher ratings on motor behavior indicated that more than 40% of the children in each age range were rated as unsatisfactory (see Table 21, p. 48).

e. Perceptual Training

Since it was presumed that many of the children in the sample would have perceptual deficiencies, teachers were asked to check techniques for perceptual training which they used and to indicate the use of any techniques which were not listed in the questionnaire. Numbers and percentages of children engaged in specific perceptual activities are shown in Appendix D, p. 113. It can be seen that a wide variety of methods were employed and that the use of each technique decreased sharply with increasing age. That is, the younger children participated in activities specifically designed for perceptual training to a much greater extent than did the older children.

f. Tactile Perception

Teachers were asked to indicate techniques used with each child which were designed to aid the development of tactile perception and to add any techniques that were not listed. Table 4, Appendix D, p. 114, shows the percentage of the subjects in each of three age ranges with whom these techniques were used. More than 65% of the youngest children (6 to 8 years old) were engaged in activities which involve tactile discrimination of objects and tactile identification of objects. This table indicates that the use of specific techniques to enhance tactile perception decreases sharply with increasing age.

Interview

Of the eleven schools included in the study, three had separate departments for special children. The size of the departments ranged from four to ten classes, usually under the direction of a full time supervisor. Five schools had from one to five classes set aside for special educational treatment. In three schools where children were recognized as special, no special classes were available and children were placed in classrooms within the regular program.

The school personnel interviewed included three School Social Workers, one Administrative Assistant (Admissions Officer), and four Principals, two of whom were accompanied by Supervising Teachers and one by the Superintendert.[1]

The information below reports the results of the interviews and follows the format of the interview described in Chapter II.

Nature of Special Classes. The composition of the classes varied from children with one type of disorder (e.g., all aphasic children or all children with language dysfunction) to a class that was described as being heterogeneous and including children with emotional problems, those who needed cultural and/or familial enrichment, those who were brain injured, those who had shown minimal or no academic progress in regular classes, late school comers, those with problems in visual perception and the socially immature. More than half of the schools reported that most of the special children in their schools were placed in heterogeneous classes without regard to the kind of disorder the child exhibited.

Identification of the Special Child. Two schools relied exclusively on referral data for their information. However, most schools included a Psychologist, an Audiologist and a Social Worker or Coordinator of Pupil Services as members of their intake team. Some of these professional personnel were not full time, but were available to the schools on a part time or consultant basis. In some instances, the intake team included one or more of the following: an Educational Supervisor, a Speech and Language Diagnostician, a School Nurse, and a Neurologist. In every school staff reviews regarding placement of a particular child, subsequent to the time of intake, involved the Supervisor, the Principal, the Social Worker, and occasionally the Superintendent.

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[1] Due to time considerations, the interview was not held in three of the eleven schools.

Placement Decision. In five schools, younger children were placed directly in special classes as a result of the decision made at the time of the intake staff's review. Three of the schools routinely placed all younger children in regular pre-primary classes regardless of suspicion of candidacy for special class placement. Older children who had been recognized as special by one institution were placed directly into special classes, if available, at the receiving institution. Older children were, in general, placed in regular classes and were subject to end-of-year review with regard to special class placement.

The factors that contributed to the decision to place a child in a special class did not readily yield themselves to the probings of the interviewer. However, six schools did indicate that deviational behavior observed during the course of intake appeared to be the primary source for the decision. Some of the criteria mentioned as signalling need for special class placement were: inconsistent auditory responses; discrepancies between the audiometric curve; voice quality and language behavior; wide scatter on psychological tests; bizarre behavior during the intake procedure; hyperactivity; and minimal degree of social awareness.

Transfer to a Special Class. Of the schools in which interviews were held, one reported that it did not transfer children from regular classes to special classes. Another had no special classes in which to place such children. The remaining six schools reported that they occasionally transferred children to special classes.

The reasons given for transferring children from regular classes were, on the whole, uniform for the eight schools. Four schools transferred students on the basis of teacher recommendations or teacher reports. In those schools having a Supervisor of Special Classes, his approval was also necessary to effect the transfer. In addition to teacher reports, two schools required the recommendation of an attending psychologist after intensive observation. The remaining two schools transferred children as a result of yearly evaluations by the teacher, the Supervisor and the Principal. The most frequently cited reasons for transferring students to special classes were poor academic achievement, poor classroom adjustment, hyperactivity, and deficiencies in memory and sequence learning.

Transfer from a Special Class. The types of educational settings into which children were transferred were quite varied. Four schools reported that children were transferred to "slow learning" classes, either within the school or, if it had been determined that the child's hearing was intact, to a similar class in a school for the hearing. In addition, two of these four schools indicated that children were placed into the regular academic program in the school if their earlier deficiencies had been overcome. Four schools said that they transferred students out of the structured program to their own regular deaf classes. It was also reported that children were transferred into integrated classes for the hard of hearing in the public schools, normal classes in regular schools and hearing classes for the mentally retarded. No school mentioned the combination of more than three of the above. In addition, one school reported that if a particular child did not seem to benefit from their special program the child was dropped from the school. In all schools the decision to transfer a child out of a special program was based primarily on teacher and/or Supervisor reports.

Table 6. Intercorrelations between Subtests of the Raven's Coloured Progressive Matrices Test and the Total Score.

	Set Ab	Set B	Total
Set A	.6420	.6053	.8286
Set Ab		.7074	.9118
Set B			.8838

(All correlations are significant beyond .01).

Table 7. Means and Standard Deviations of Scores on the Four Nonverbal Subtests of the ITPA.

	Visual Decoding	Motor Encoding	Visual-Motor Sequencing	Visual-Motor Association
Mean	-.806	-.322	-1.360	-.706
Standard Deviation	1.14	1.09	.943	1.15
_t_ Test	7.36*	3.02*	13.75*	6.42*

*Significantly different from expected mean beyond the .01 level.

Table 8. Levels of Receptive Language Development of Subjects by Age Range.

	Age Range							
	6-8		9-11		12-14		Total	
Level	N*	%	N	%	N	%	N	%
1. Gives little or no attention to speech	5	7.4	4	5.7	2	3.7	11	5.7
2. Has begun to pay purposive attention to speech	1	1.5	1	1.4	2	3.7	4	2.1
3. Attends purposively to speech but shows no evidence of comprehension	6	8.8	2	2.9	3	5.6	11	5.7
4. Limited comprehension of speech with situational guidance only	9	13.2	6	8.6	1	1.9	16	8.3
5. Understands up to ten words and word phrases	1	1.5	3	4.3	3	5.6	7	3.6
6. Understands up to fifty words and one-idea phrases	7	10.3	5	7.1	5	9.3	17	8.9
7. Understands some commands and statements conveying more than one idea, chiefly within a concrete context, but not conversation	9	13.2	11	15.7	9	16.7	29	15.1
8. Has begun to understand classroom conversation (things of immediate interest, recent events, including questions); understands several ideas in successive sentences within a non-concrete context	12	17.6	14	20.0	10	18.5	36	18.8

*N=Number

(continued)

Table 8. (Continued)

Level	6-8 N*	6-8 %	9-11 N	9-11 %	12-14 N	12-14 %	Total N	Total %
9. Understands fairly readily simple conversation (about familiar people, things, events in everyday life); has a fairly wide-range vocabulary	18	26.5	20	28.6	9	16.7	47	24.5
10. Understands freely conversation of familiar people and strangers about unfamiliar people, things, events; understands simple stories without contextual clues; widerange vocabulary, now uncountable	0	0.0	4	5.7	10	18.5	14	7.3
Totals	68		70		54		192	

*N-Number

Table 9. Level of Expressive Language Development of Subjects by Age Range.

	Age Range							
	6-8		9-11		12-14		Total	
Level	N*	%	N	%	N	%	N	%
1. Does not vocalize	9	13.2	6	8.6	2	3.7	17	8.9
2. Vocalizes to a limited extent	12	17.6	11	15.7	11	20.4	34	17.7
3. Vocalizes freely and purposively, perhaps imitates speech	9	13.2	4	5.7	3	5.6	16	8.3
4. Begins spontaneous talk, uses up to ten words and word phrases	5	7.4	5	7.1	1	1.9	11	5.7
5. Talks fairly freely in single words, may sometimes combine words to express an idea	7	10.3	9	12.9	4	7.4	20	10.4
6. Talks very freely in words and phrases	11	16.2	5	7.1	6	11.1	22	11.5
7. Begins to talk in sentences, may use single words or two or three word units to express ideas	3	4.4	7	10.0	7	12.9	17	8.9
8. Begins to express ideas fairly readily in successive phrases and incomplete sentences; few single words	7	10.3	11	15.7	5	9.3	23	11.9
9. Frequently expresses ideas in phrases and sentences which may be incomplete; expression through speech is usually adequate means of communication	4	5.9	7	10.0	10	18.5	21	10.9

*N=Number

(continued)

Table 9. (continued)

Level	6-8		9-11		12-14		Total	
	N*	%	N	%	N	%	N	%
10. Language almost like normal child of similar age; describes experiences readily to strangers; asks questions; expects to be understood	1	1.5	5	7.1	5	9.3	11	5.7
Total	68		70		54		192	

*N=Number

Table 10. Ability of Subjects to Benefit from Audition in Language Learning by Age Range.

Level	Age Range							
	6-8		9-12		12-14		Total	
	Number (N=68)	%	Number (N=70)	%	Number (N=54)	%	Number (N=192)	%
1. No attention or response to environmental sounds	10	14.7	10	14.3	8	14.8	28	14.6
2. Beginning to attend to environmental sounds	11	16.2	3	4.3	4	7.4	18	9.4
3. Attends mainly to environmental sounds	3	4.4	1	1.4	5	9.3	9	4.7
4. Seems to hear speech but shows no evidence of speech comprehension	6	8.8	6	8.6	5	9.3	17	8.9
5. Beginning to differentiate speech sounds from environmental sounds	3	4.4	3	4.3	0	0.0	6	3.1
6. Attends to both environmental sounds and speech sounds directed towards him	6	8.8	3	4.3	6	11.1	15	7.8
7. Beginning to comprehend speech through audition in context only, with or without amplification	7	10.3	17	24.3	5	9.3	29	15.1
8. Comprehension of speech through audition in most situations, with amplification	11	16.2	19	27.1	15	27.8	45	23.4
9. Comprehension of speech through audition in most situations, without amplification	4	5.9	6	8.6	5	9.3	15	7.8

(Continued)

Table 10. (continued)

Level	6-8		9-12		12-14		Total	
	Number (N=68)	%	Number (N=70)	%	Number (N=54)	%	Number (N=192)	%
10. Shows no evidence of auditory disturbance - has normal hearing	7	10.3	2	2.9	1	1.9	10	5.2
Totals	68		70		54		192	

Table 11. Means and Standard Deviations for Ratings on the Three Language Scales.

	Receptive	Expressive	Auditory
Means	6.807*	5.219	5.615
Standard Deviation	2.504	2.783	2.884

*Significantly higher than Expressive and Auditory beyond the .01 level.

Table 12. Intercorrelations Between Language Rating Scales.*

Scale	Expressive	Auditory
Receptive	.7445	.6329
Expressive	——	.7067

* All correlations are significant beyond the .01 level.

Table 13. Correlations of Language Scales with Selected Objective Measures.

	Measures					Hearing
	C.A.**	Knox	VMS***	Raven's	Stencil	Level
Receptive	.1323	.2409*	.2488*	.1931	.1563	-.1883
Expressive	.1631	.3167*	.2228*	.2238*	.2467*	-.3066*
Auditory	.0060	.1839	.0893	.0356	.0149	-.5269*

* Significant at the .01 level.

** C.A. = Chronological Age.

*** VMS = Visual Motor Sequencing Test

Table 14. Satisfactory Behavior Ratings.

Age Range	Sex	N*	Emotional Stability N	Emotional Stability %	Social Acceptability N	Social Acceptability %	Classroom Behavior N	Classroom Behavior %	All Satisfactory N	All Satisfactory %
6 - 8	Male	39	10	25.6	15	38.5	12	30.8	5	12.8
6 - 8	Female	27	12	44.4	14	51.8	10	37.0	7	25.9
Total		66	22	33.3	29	43.9	22	33.3	12	18.2
9 - 11	Male	42	15	35.7	19	45.2	17	40.5	8	19.0
9 - 11	Female	28	11	39.3	13	46.2	8	28.6	5	17.8
Total		70	26	37.1	32	45.7	25	35.7	13	18.6
12 - 14	Male	41	19	46.3	16	39.0	15	36.6	11	26.8
12 - 14	Female	11	4	36.4	6	54.5	3	27.3	1	9.1
Total		52	23	44.0	22	42.3	18	34.6	12	23.1
6 - 14	Male	122	44	36.1	50	41.0	44	36.1	24	19.7
6 - 14	Female	66	27	40.9	33	50.0	21	31.8	13	19.7
Total		188	71	37.8	83	42.1	65	34.6	37	19.7

*N=Number

Table 15. Satisfactory Ratings on Two Behavior Scales

Age Range	Sex	N*	Emotional & Social N	Emotional & Social %	Emotional & Classroom N	Emotional & Classroom %	Social & Classroom N	Social & Classroom %
6 - 8	Male	39	2	5.1	1	2.6	2	5.1
6 - 8	Female	27	4	14.8	0	0.0	2	7.4
Total		66	6	9.1	1	1.5	4	6.1
9 - 11	Male	42	4	9.5	1	2.4	3	7.1
9 - 11	Female	28	6	21.4	0	0.0	1	3.6
Total		70	10	14.3	1	1.4	4	5.7
12 - 14	Male	41	6	14.6	0	0.0	0	0.0
12 - 14	Female	11	2	18.2	0	0.0	1	9.1
Total		52	8	15.4	0	0.0	1	1.9
6 - 14	Male	122	12	9.8	2	1.6	5	4.1
6 - 14	Female	66	12	18.2	0	0.0	4	6.1
Total		188	24	12.8	2	1.1	9	4.8

*N=Number

Table 16. Children Exhibiting Strauss Syndrome.

Age Range	Sex	N*	Number Exhibiting Syndrome	Percentage Exhibiting Syndrome
6 - 8	Male	39	27	69.2
6 - 8	Female	27	16	59.2
Total		66	43	65.2
9 - 11	Male	42	29	69.0
9 - 11	Female	28	14	50.0
Total		70	43	61.4
12 - 14	Male	41	20	48.8
12 - 14	Female	11	7	63.6
Total		52	27	51.9
6 - 14	Male	122	76	62.3
6 - 14	Female	66	37	56.1
Total		188	113	60.1

*N-Number

Table 17. Language Methods.

Methods	6-8 (N=68)		9-11 (N=71)		12-14 (N=54)		Total (N=193)	
	N*	%	N	%	N	%	N	%
Fitzgerald Key	38	55.9	42	59.2	41	75.9	121	62.6
McGinnis and Modified McGinnis	24	35.3	19	26.8	7	13.0	50	25.9
Natural Language	54	79.4	51	71.8	34	63.0	139	72.0
Hortense Barry	5	7.4	15	22.1	5	9.2	25	12.9

*N=Number

Table 18. Reading Materials by Age and Level. (N=188)

	Age Range					
	6-8 (N=67)		9-11 (N=69)		12-14 (N=52)	
	N*	%	N	%	N	%
Unspecified	1	1.4			2	3.8
Reading Readiness	2	2.9	3	4.3		
Pre-Primer	21	31.3	13	18.8	3	5.7
Primer	16	23.8	7	10.1	1	1.9
Level I	9	13.4	14	20.2	5	9.6
Level 2			11	15.9	8	15.3
Level 3			1	1.4	6	11.5
Level 4					5	9.6
Level 5					1	1.9
No Books	18	26.8	12	17.3	11	21.1
Levels 1 - 2			6	8.6	5	9.6
Levels 1 - 4			2	2.8		
Levels 3 - 4					1	1.9
Levels 4 - 5					4	7.6

*N=Number

Table 19. Levels of Arithmetic Textbooks Used By Age Level. (N-185)

	Age Range					
	6-8 (N=67)		9-11 (N=68)		12-14 (N=50)	
	N*	%	N	%	N	%
Unspecified	1	1.5	1	1.5	1	2.0
Arithmetic Readiness					1	2.0
Kindergarten	3	4.5				
Kindergarten, Level I			2	2.9		
Beginning	3	4.5				
Primer	2	3.0	2	2.9		
Level I	33	49.2	16	23.5	3	6.0
Levels I and II	5	7.5	3	4.4	2	4.0
Level II			9	13.2	2	4.0
Levels II and III			4	5.9	2	4.0
Level III			6	8.8	11	22.0
Levels I, II, and III					2	4.0
Level IV					6	12.0
Levels I, II, III, and IV					2	4.0
Levels III and IV			1	1.5	2	4.0
Levels II, III, and IV			1	1.5		
Level V					5	10.0
Level VI	1	1.5			1	2.0
Level A			5	7.4		
Level B			1	1.5		
Level C			2	2.9	1	2.0
No Books	19	28.4	15	22.1	9	18.0

*N=Number

Table 20. Other Mathematics Materials (N=193).

	Age Range					
	6-8 (N-68)		9-11 (N=71)		12-14 (N=54)	
	N*	%	N	%	N	%
Cuisenaire	2	2.9	1	1.4		
Stern	11	16.2	8	11.8	5	9.2
Montessori	20	29.4	2	2.9		

*N=Number

Table 21. Number and Percentage of Children Rated Satisfactory on Motor Behavior

	Age Range							
	6-8 (N=66)		9-11 (N=69)		12-14 (N=50)		Total (N=185)	
	N*	%	N	%	N	%	N	%
Satisfactory	37	56.1	37	53.6	29	58.0	103	55.7

*N=Number

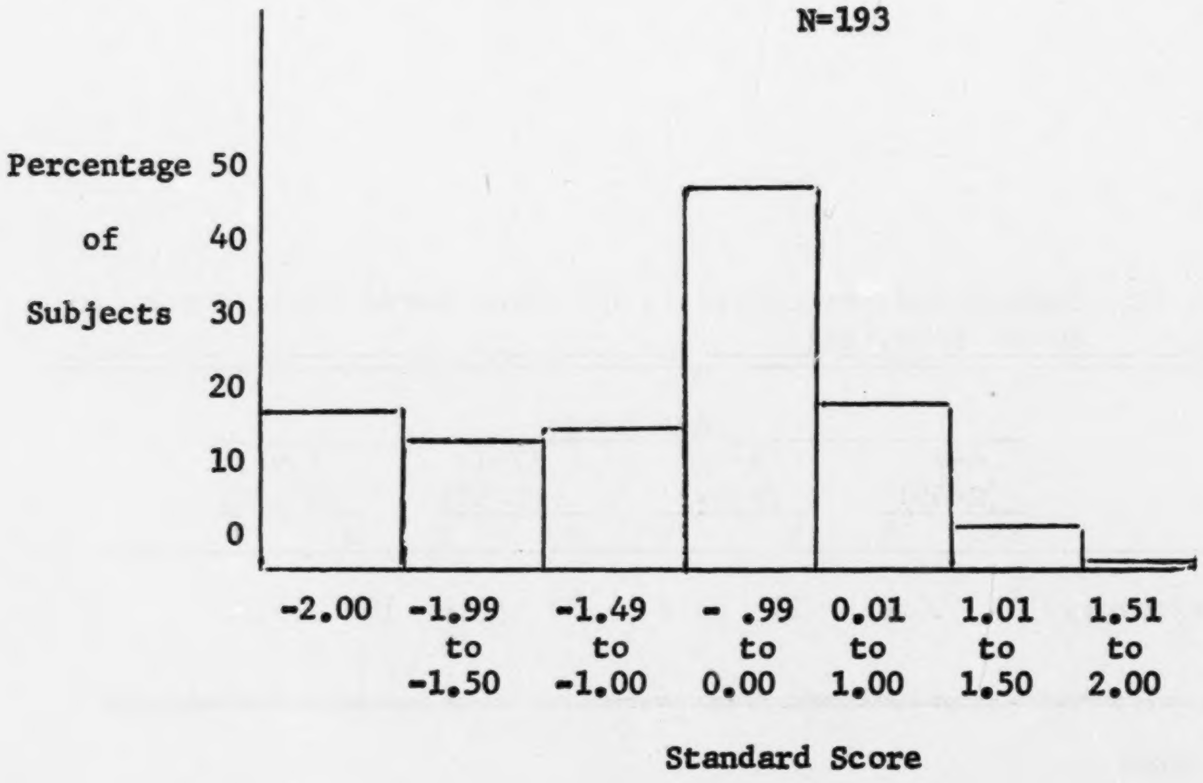

Figure 3. Distribution of Standard Scores - Visual Decoding.

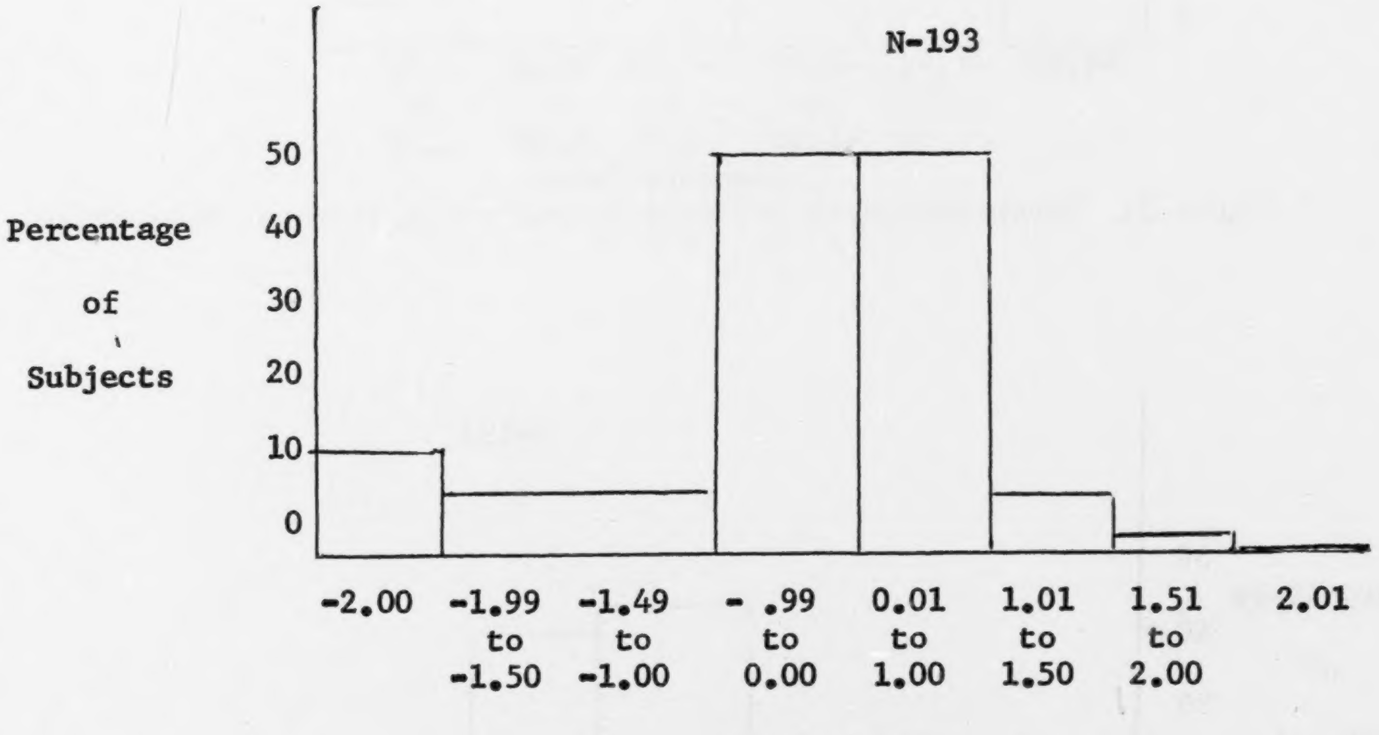

Figure 4. Distribution of Standard Scores - Motor Encoding.

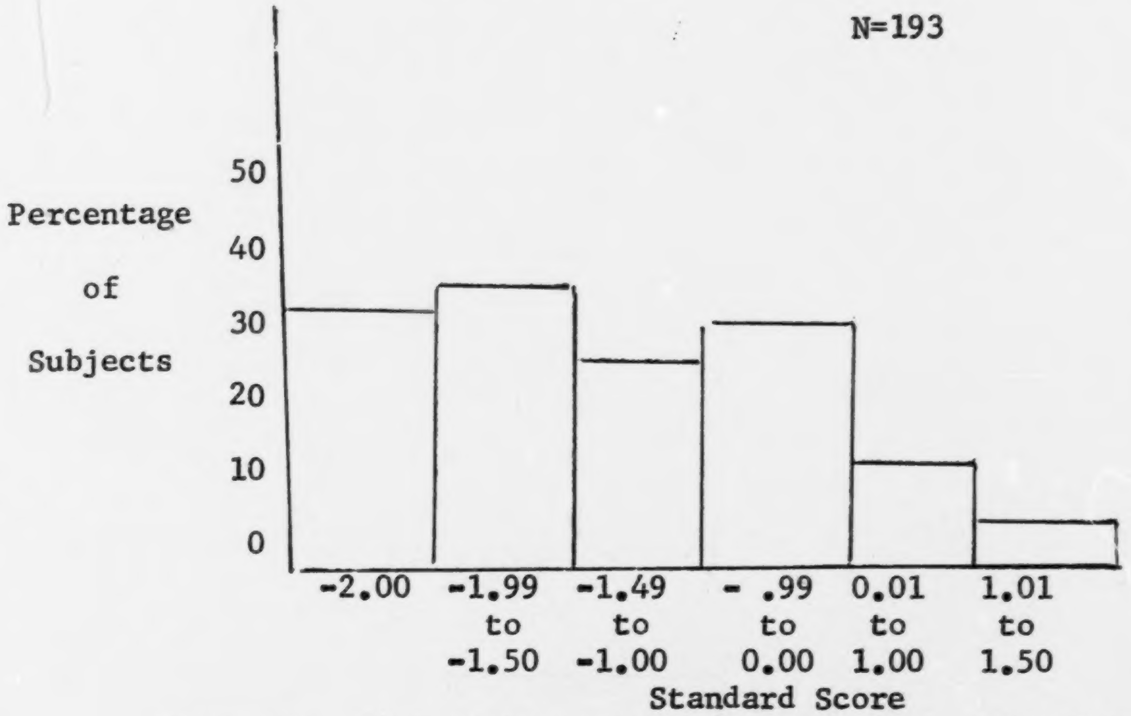

Figure 5. Distribution of Standard Scores - Visual Motor Sequencing.

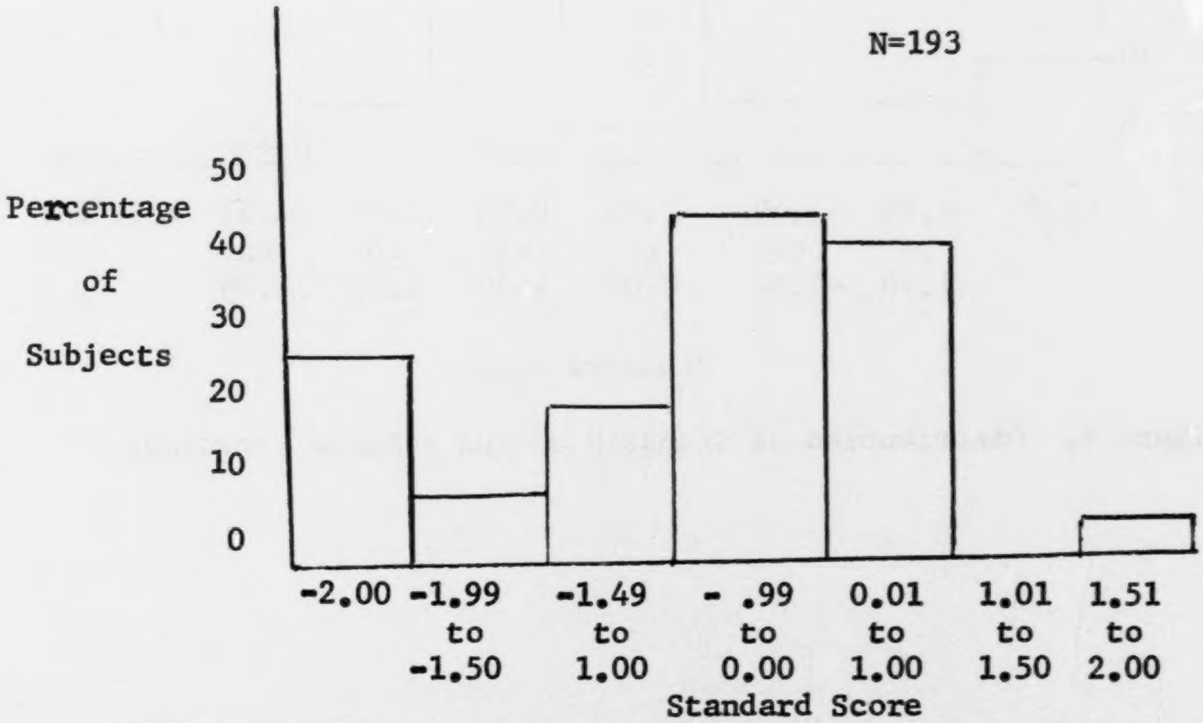

Figure 6. Distribution of Standard Scores - Visual Motor Association.

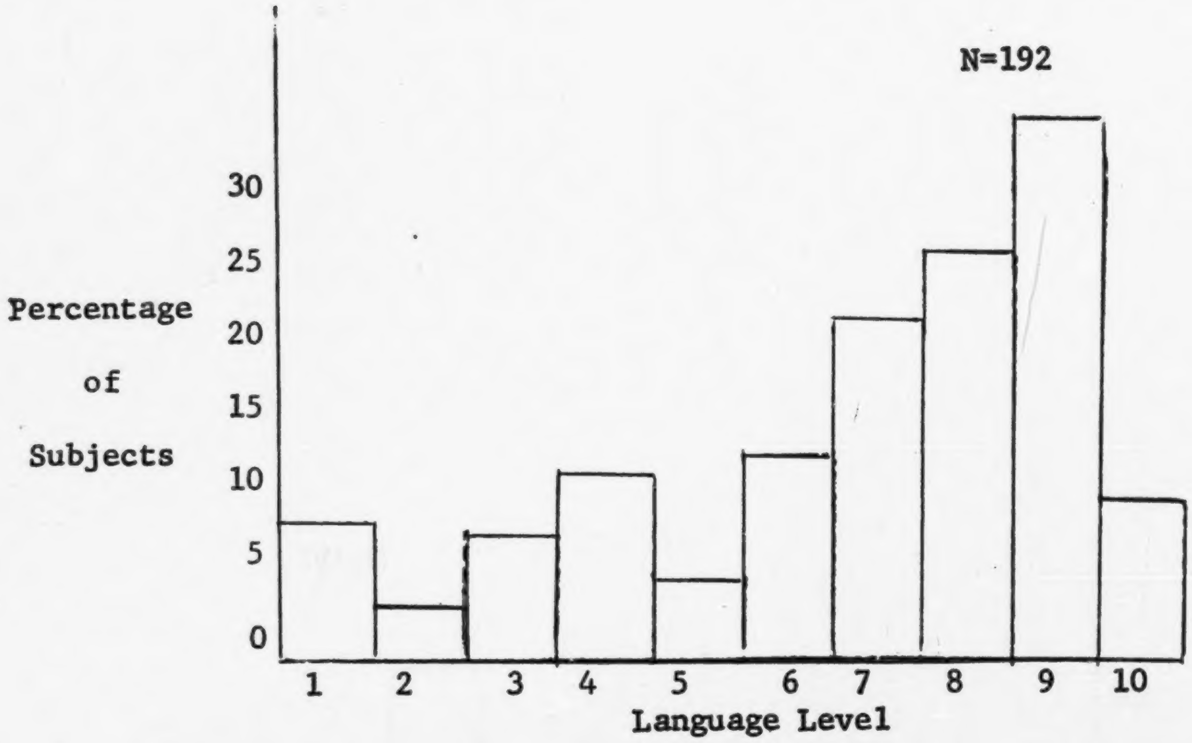

Figure 7. Percentage of Subjects at Each Level of Receptive Language Development. Information from Teacher Rating Scales.

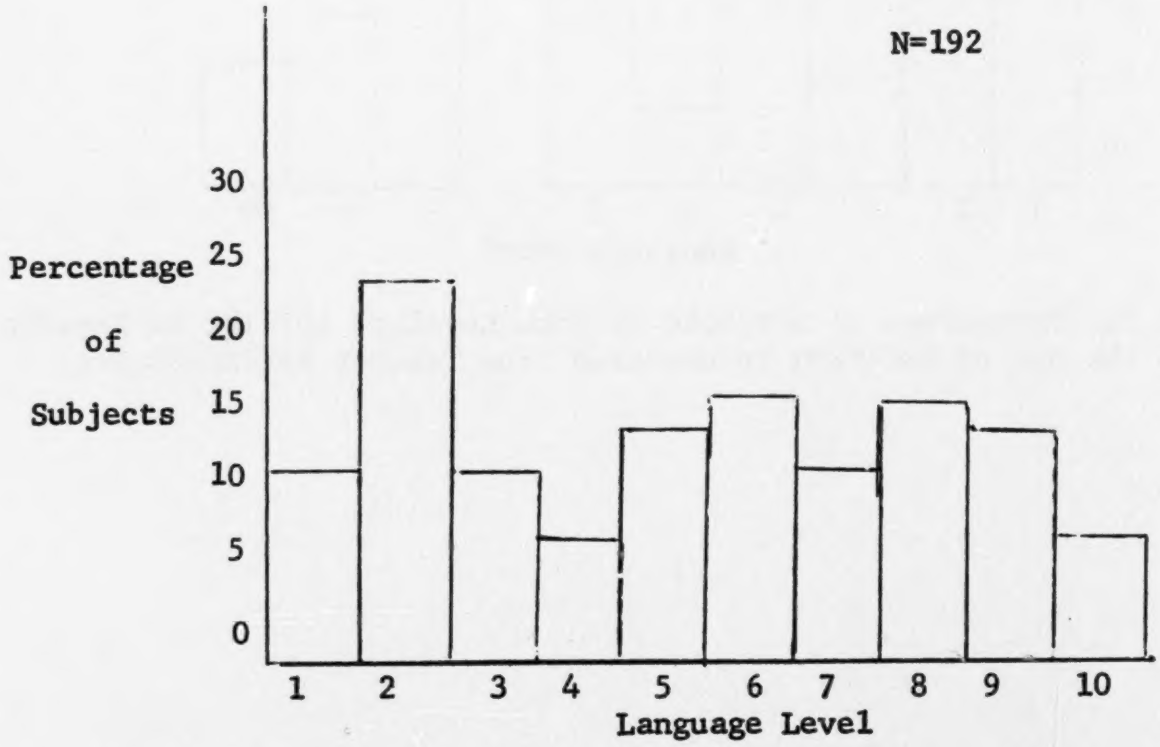

Figure 8. Percentage of Subjects at Each Level of Expressive Language Development. Information from Teacher Rating Scales.

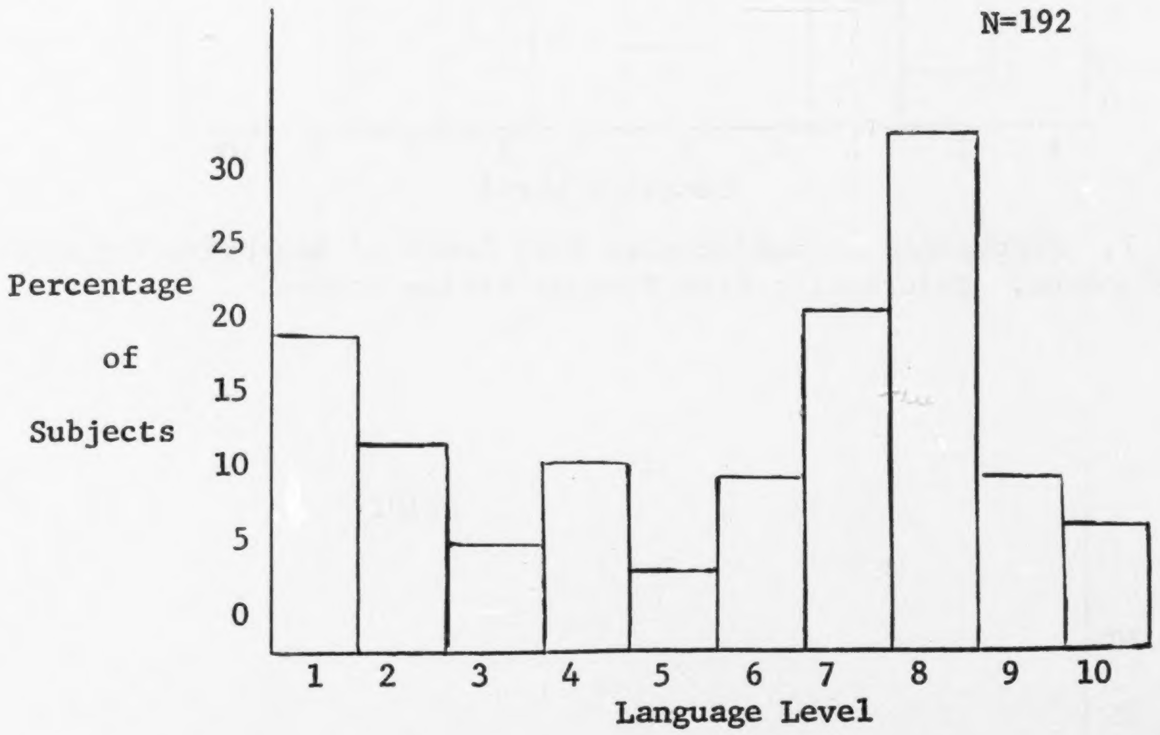

Figure 9. Percentage of Subjects at Each Level of Ability to Benefit from the Use of Audition Information from Teacher Rating Scales.

CHAPTER V

Results-Subjects with Selected IQ Scores

Introduction

Because of the preponderance of subnormal IQ scores in the population, it was decided to analyze separately data from those subjects whose numerical IQ scores fell into normal or above normal range. Sixty-eight subjects out of the total sample of 193 had reported numerical IQ scores of 90 or above. The mean IQ for this portion of the population is 104.16, in comparison to a mean IQ of 87.64 for the total population.

The mean age of these subjects was 10.08 years, in comparison to a mean of 10.28 for the total population. The difference in mean age is not statistically significant.

The mean hearing loss for subjects of normal intelligence is 84.06 dB, in contrast to a hearing loss of 81.17 dB for the total population. The difference in hearing loss is not statistically significant.

The results of performance on the test battery responses to the language and behavior questionnaires for the normal intelligence group are reported below, with comparisons drawn between their performance and that of the total "special" population.

Table 22, on p. 58, compares the performance on the test battery of the two groups of subjects.

Results of Testing

The Coloured Progressive Matrices. The Coloured Progressive Matrices were administered to all 68 subjects of normal IQ. A mean total score of 23.09 was achieved by this group, in contrast to a mean of 20.31 for the total population. This represents a statistically significant superiority in total score (to beyond .001). The score obtained by these subjects, in contrast to that of the total population, is not significantly worse than the expected score of 25.00. Thus, there does not appear to be a generalized perceptual deficit for children in the population possessing normal intelligence.

The Stencil Design Test. The Stencil Design Test was administered to 66 of the 68 subjects with normal IQ scores. The mean score on this test for this group is 111.36 months, in contrast with a total group mean of 99.34 months, a difference of one year on this task. The mean of 111.36 months is still below the expected mean of 121.80 (the mean chronological age in months of the 66 subjects taking this test). However the difference is not statistically significant. Thus, performance in this perceptual task confirms the conclusion stated above, that no generalized perceptual deficit can be demonstrated for these subjects.

The Knox Cube Test. Performance on the Knox Cube Test yielded a mean score of 118.40 months for the 68 subjects of normal IQ in contrast to the mean of 102.08 months for the total population. This represents a difference of more than 16 months in performance on this memory task.

In contrast to the significantly lower than expected performance of the total population on this task, the children of normal intelligence did not deviate significantly from the expected score of 120.57. Thus, the memory for movement patterns of that portion of the population with average or above average intelligence is not significantly different from that of a normal hearing population.

The Illinois Test of Psycholinguistic Abilities. Standard scores on the four nonverbal subtests of the ITPA were obtained for 67 of the 68 subjects with normal intelligence. For all four subtests, scores for this segment of the population were higher than those attained by the total population, though still somewhat below the expected mean of 0.0.

Mean standard scores on the Visual Decoding, Motor Encoding, and Visual Motor Association subtests, while having negative values, were not significantly below the expected mean of 0.0. Thus, for that portion of the population having average intelligence, the facets of psycholinguistic ability measured by these subtests did not appear to be significantly impaired. However, it must be noted that a positive bias, as described on page 23 in Chapter IV, was introduced into the results by the use of age norms, and this portion of the entire group, in fact, may fall below normal when compared with a normative population of similar chronological age.

Performance of these subjects on the Visual Motor Sequencing Test, while significantly better than that of the total population, remained significantly below the expected mean of 0.0. Thus, a significant deficit in the capacity to remember visual symbols in a given order is demonstrated, even for that portion of the total population whose intelligence is normal.

Teacher Rating Scales

Language Rating Scales. With the elimination of subnormal nonverbal intelligence as a variable, the picture presented by the ratings on expressive and receptive language development is altered considerably. Means and standard deviations of assigned levels for the entire population and for the normal intelligence group are presented in Table 23, p. 59. While the differences in mean language ratings are not significant, those of the subjects with normal intelligence are somewhat higher than the ratings assigned to the total population.

Distribution of ratings on the receptive language scale paralleled those for the entire population, with a mode at Level 9 and a median score between Levels 7 and 8 (see Figure 10, p. 63, Table 24, p. 60), shows the number and percentage of subjects of normal intelligence, by age level, at each level of receptive language development. On the expressive language scale the mode for this segment of the population is at Level 8, "Begins to express ideas...in successive phrases and incomplete sentences." It will be recalled that for the total population the mode on the expressive language scale fell at Level 2, "Vocalizes to a limited extent." The median score is at Level 6 for this segment of the population, in contrast with a median at Level 5 for the entire population.(see Figure 11, p. 63, Table 25, p. 61), shows the number and percentage of subjects of normal intelligence, by age range, falling at each level of language development. Of most significance is the shift in the pattern of intercorrelations obtained between ratings on the language scales and other variables. It will be recalled that for the entire population the ratings on the receptive language scale correlated only with tests of memory, while ratings on expressive language correlated significantly with tests of perceptual ability, memory and hearing level. Neither receptive nor expressive language ratings correlated significantly with chronological age, indicating that, for the entire population, no improvement in language performance was observed with increasing chronological age.

When the effect of subnormal intelligence is eliminated, both receptive and expressive language ratings correlate significantly with chronological age. However, these ratings do not correlate significantly with any tests of memory or perceptual ability. Thus, the language level of that portion of the population having normal intelligence improves significantly with age, presenting a complete reversal of the pattern observed with the entire population.

Differences among the intercorrelations of ratings on the language scales with selected variables for this portion of the population are reported in Table 26, p. 61. The results reported in this table may be compared with those in Table 13, p. 41.

It will be noted that expressive language ratings correlate significantly with hearing level, as is the case with the total population.

Figures 12 and 13, p. 64, show the rise in receptive and expressive language levels with chronological age for the subjects with normal intelligence as opposed to the general lack of increase in performance level for the total population.

Behavior Check List. The number and percentage of subjects with normal intelligence who were rated as exhibiting satisfactory emotional adjustment, social adjustment, and classroom behavior is reported in Table 27, p. 62. Also indicated in this table are the number and percent of subjects achieving satisfactory ratings in two or more areas, and the number and percent of subjects displaying some symptoms of the Strauss Syndrome.

On each of the three scales the percentage of children attaining satisfactory ratings increases with chronological age. In contrast to the total population, whose behavior ratings remained static across age ranges, this group of subjects showed a statistically significant increase in acceptable emotional behavior across age ranges. None of the other increases are statistically significant (see Table 27, p. 62).

It can be seen however, from a comparison of Tables 16 and 27, pp. 44 and 62, that the percentage of subjects of normal intelligence displaying some symptoms of the Strauss Syndrome, is not statistically different from that observed in the total population. Thus, it would seem that behavioral problems characterize the special population, regardless of intellectual ability.

Table 22. T Tests Between Mean Scores on Tests for Subjects of Normal Intelligence and the Entire Population.

	Tests						
	Progress Matrices	Knox Cube	Stencil Design	*** Vis.D.	*** ME	*** VMS	*** VMA
Mean Total Population	20.31	102.08	99.34	-.80	-.32	-1.36	-.71
Standard Deviation Total	6.54	45.08	37.35	1.14	1.09	.94	1.15
Mean of Normal IQ Subjects	23.09	118.40	111.36	-.27	-.15	-.94	-.22
Standard Deviation Normal	6.16	43.98	38.52	.89	.82	.92	.99
Degrees of Freedom	259	258	249	256	256	252	256
t Test	3.14*	2.61*	2.24**	3.90*	1.32	3.24*	3.32*

*Significant beyond .01.
** Significant at .05 but not at .01.
*** Vis.D=Visual Decoding
ME=Motor Encoding
VMS=Visual Motor Sequencing
VMA=Visual Motor Association

Table 23. Means and Standard Deviation of Ratings on Receptive and Expressive Language Scales for Total Population (N=192) and Subjects with Normal Intelligence (N=68).

	Receptive Language Level	Expressive Language Level
Mean (Total)	6.81	5.22
Standard Deviation (Total)	2.50	2.78
Mean (Normal)	7.41	5.78
Standard Deviation (Normal)	2.28	2.68

Table 24. Receptive Language Development - Subjects with Normal Intelligence

	Age Range							
	6 - 8		9 - 11		12 - 14			
Level	N*	%	N	%	N	%	Total	Percentage
1	2	6.9	1	5.3	0	0.0	3	4.4
2	0	0.0	0	0.0	0	0.0	0	0.0
3	2	6.9	0	0.0	1	5.0	3	4.4
4	3	10.3	1	5.3	0	0.0	4	5.9
5	1	3.4	0	0.0	0	0.0	1	1.5
6	3	10.3	0	0.0	2	10.0	5	7.4
7	4	13.8	4	21.2	2	10.0	10	14.7
8	6	20.7	7	36.8	3	15.0	16	23.5
9	8	27.6	5	26.6	4	20.0	17	25.0
10	0	0.0	1	5.3	8	40.0	9	13.2
Total	29		19		20		68	

*N=Number

Table 25. Expressive Language Development - Subjects with Normal Intelligence.

	Age Range							
	6 - 8 (N=29)		9 - 11 (N=19)		12 - 14 (N=20)		Total (N=68)	
Level	N*	%	N	%	N	%	N	Percentage
1	2	6.9	1	5.3	1	5.0	4	5.9
2	4	13.8	2	10.5	2	10.0	8	11.8
3	5	17.2	2	10.5	0	0.0	7	10.3
4	3	10.3	0	0.0	0	0.0	3	4.4
5	4	13.8	2	10.5	1	5.0	7	10.3
6	4	13.8	3	15.8	0	0.0	7	10.3
7	1	3.4	3	15.8	4	20.0	8	11.8
8	5	17.2	4	21.1	3	15.0	12	17.6
9	1	3.4	2	10.5	6	30.0	9	13.2
10	0	0.0	0	0.0	3	15.0	3	4.4

*N=Number

Table 26. Correlations of Language Scales with Selected Variables for Subjects of Normal Intelligence.

		Tests				
	Chronological Age	Knox	VMS	Ravens	Stencil	Audiometric
Receptive	.3253*	.1046	.2047	.1866	.1061	-.0684
Expressive	.3531*	.2302	.1768	.2080	.2023	-.3922*

*Significant beyond .01.

Table 27. Satisfactory Ratings on Behavior Scales - Subjects with Normal Intelligence.

Range	Emotional N**	Emotional %	Social N	Social %	Classroom N	Classroom %	All N	All %	Emotional and Social N	Emotional and Social %	Emotional and Classroom N	Emotional and Classroom %	Social and Classroom N	Social and Classroom %	Strauss N	Strauss %
6-8 (N=29)	8	27.6	15	23.4	11	37.9	5	17.3	3	10.3			4	13.8	18	67.1
9-11 (N=18)	5	27.8	7	38.9	5	27.8	4	22.2	1	5.5					12	66.7
12-14 (N=17)	11	64.7*	9	52.9	10	58.8	8	47.1	1	5.9	1	5.9			7	41.2
Total (N=64)	24	37.5	31	48.4	26	40.6	17	26.6	5	7.8	1	1.6	4	6.3	37	57.8

*Significant at .05 level.

**N=Number

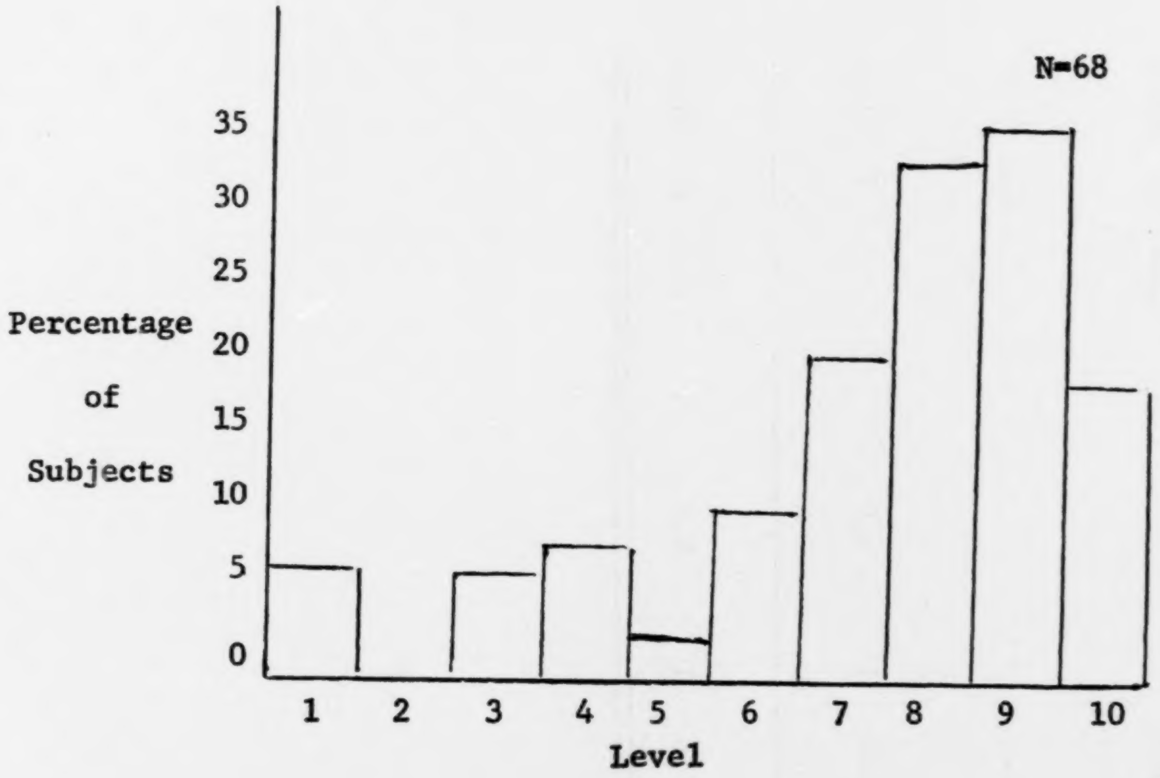

Figure 10. Rating on Receptive Language - Subjects with Normal Intelligence.

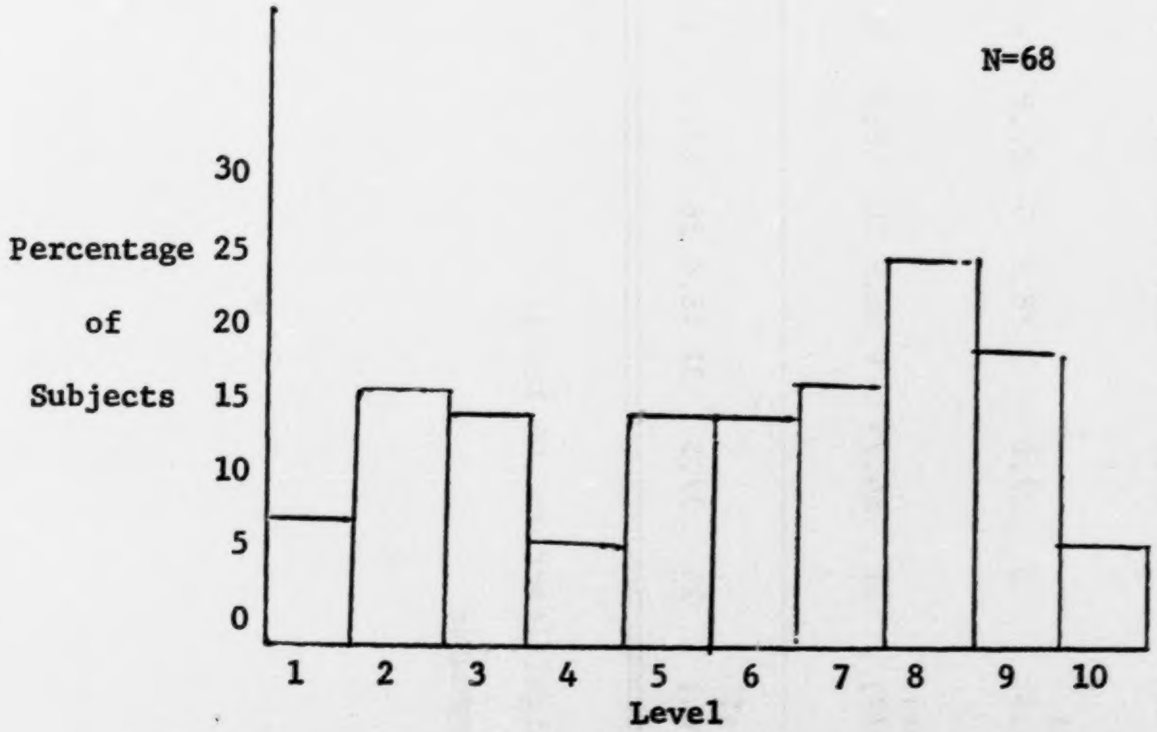

Figure 11. Rating on Expressive Language - Subjects with Normal Intelligence.

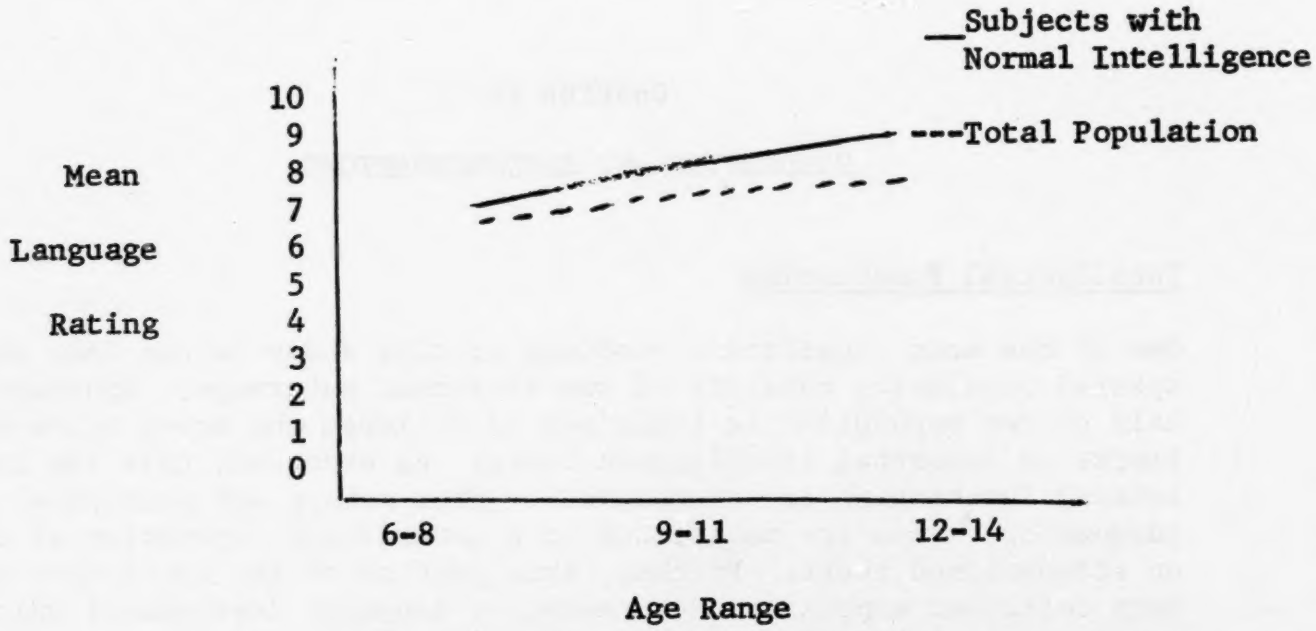

Figure 12. Comparison of the Development of Receptive Language Skills in Subjects with Normal Intelligence (N=68) and Total Population. (N=192)

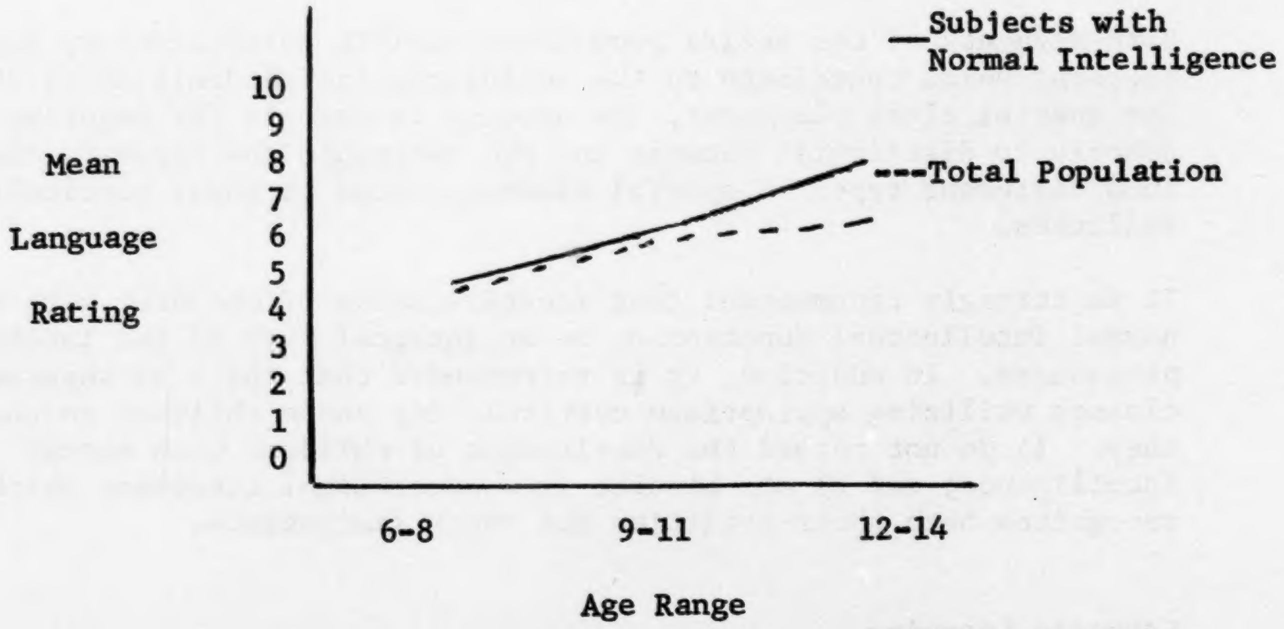

Figure 13. Comparison of the Development of Expressive Language Competence on Subjects with Normal Intelligence (N=68) and Total Population. (N=192)

CHAPTER VI

DISCUSSION AND RECOMMENDATIONS

Intellectual Functioning

One of the most significant findings of this study is the fact that the special population consists of two different subgroups. Approximately half of the population is comprised of children who score below normal limits on nonverbal intelligence tests. As expected, this low intellectual functioning is accompanied by poor memory and perceptual inadequacies, which are manifested in a generalized depression of scores on standardized tests. Further, this portion of the population exhibits very deficient expressive and receptive language development which does not improve with increasing chronological age.

The other portion of the population is comprised of hard of hearing and deaf children with normal intellectual functioning whose perceptual abilities and memory are largely within normal limits. For these children language development, while retarded, does improve with increasing chronological age.

Both segments of the entire population exhibit unsatisfactory behavior patterns which contribute to the administrative recognition of the need for special class placement. No attempt is made in the majority of schools to distinguish between the two subgroups and separate them into different types of special classes suited to their particular abilities.

It is strongly recommended that identification of children with subnormal intellectual functioning be an integral part of the intake procedures. In addition, it is recommended that there be separate classes utilizing appropriate curricula for these children so that they: 1) do not retard the development of children with normal intelligence; and 2) may benefit from educational treatment which recognizes both their abilities and their limitations.

Language Learning

Subjective evaluations by teachers indicate that, for the entire population, neither receptive nor expressive language abilities increased with increasing chronological age. However, it may be inferred from the pattern of development shown by those subjects with normal intellectual functioning, that this failure to acquire increasingly adequate language is directly attributable to intellectual retardation with its concomitant perceptual and memory deficits.

For that portion of the population with normal intellectual functioning, the relative ability to use language increased with age.[1]

No significant differences were found among language levels of children of differing etiologies but in the same age range. Since there were more than 25 different overlapping diagnostic labels used to describe the subjects and since, with the exception of "deaf only," none of these categories accounted for even 10% of the population, no statistical procedures could be used which would assess different learning patterns for children with the same diagnostic label.

It would seem, therefore, that for this population, intellectual retardation is the relevant obstacle to progress in language development. Hence, it is strongly recommended that children with subnormal intellectual functioning, regardless of etiology or diagnostic label, be provided with separate educational placement and modified curricular goals which take their limitations into account.

Perceptual Development and Memory

The low scores obtained on tasks involving perceptual skills and memory functioning which are directly related to intellectual subnormality was one of the more striking findings. On perceptual tasks measured by the Raven's Coloured Progressive Matrices and the Stencil Design Test, the population obtained significantly lower scores than would be expected on the basis of their chronological age. Performance on memory tasks, Knox Cube and Visual Motor Sequencing also revealed a general memory deficit at all age levels. However, for that portion of the population with normal intelligence the only significantly inferior performance was on the Visual Motor Sequencing test. Therefore, it can be seen that mere growth in chronological age, irrespective of mental development, does not eliminate the need for special treatment. Although a wide variety of special methods and activities were employed by teachers to aid the development of perceptual skills, classroom application of the methods decreased sharply after children reached 9 or 10 years of age. The importance of the continued use of special remedial techniques for these children having perceptual and memory deficits cannot be overemphasized. The child who at age eleven cannot remember a sequence of three geometric shapes can hardly be expected to remember words in the written form. The emphasis on teaching advanced reading skills, while possibly appropriate, bypasses the more basic skills of memory and perception on which the successful foundation of a reading program must be built. Teachers do seem to be aware of this problem, since a large percentage of those who are teaching the older children do not employ standard reading texts. A thorough and systematic approach, which aims at training perception and memory at all age levels, is sorely needed. Teachers questioned in this study employed a wide variety of materials and novel techniques which are listed in Appendix D, pp. 113, 114, 115. However, an entire curriculum must be developed which recognizes that 14-year-old children may need training in skills that normal 6-year-olds have mastered. Teachers cannot and should not have to rely solely on their own techniques to motivate the older children who have not mastered these basic skills.

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[1] The difference between the absolute language levels of this group and the total population of children in schools for the deaf should be investigated for comparison.

Recommendations

Records. The importance of keeping complete individual records of students in schools for the deaf should be stressed. This essential administrative function makes it possible for the staff to plan for the future of the children in their schools. In addition, research is based in part on recorded information.

The potential usefulness of records is not being realized by the majority of schools sampled in this study. Records demonstrated a lack of continuity in the gathering of information. After the initial intake procedure had been completed, there was often no recorded attempt at follow-up testing, nor were there recorded systematic subjective evaluations of the child's progress through school(i.e., his language development, behavior patterns, and general school adjustment).

Most noticeable in the majority of instances was the lack of organization within record folders, which made the information that was available difficult to gather and tabulate. Important diagnostic and etiological information was often obscured by information on bus routes, train schedules, and clothing requirements, which had been accumulated since the child's admission to the program. The importance of keeping information on each child in an organized, structured fashion, with appropriate provisions for indexing, to permit ease of access by staff and research workers alike, can not be overemphasized. This practice is currently being followed by one school sampled in the study, and was proven to be both practical and valuable.

Further, this study has demonstrated that classroom teachers can, through the medium of structured questionnaires, serve as reliable informants in the evaluation of the behavior, adjustment and learning of children in their classes. Through the adoption of structured reporting forms, perhaps similar to those used in the current study, the teacher, with a minimum of time expenditure, can provide essential longitudinal records of children's growth and development.

It is recommended that standard formats for the keeping of records be adopted for use in schools for the deaf. Such a format should include: 1) procedures for systematic evaluations by teachers; 2) periodic reporting of evaluations of the child through the use of standardized psychological, audiometric, optometric and educational achievement testing; 3) procedures for updating and reporting neurological, medical, and other relevant information obtained from consulting agencies; and 4) reported results of all staff conferences on the child's progress and placement, in addition to complete case history and evaluation forms obtained during intake procedures.

An Investigation of the Total Population of Schools for the Deaf in New York State. As a follow-up study, it is recommended that the entire population of children in schools for the deaf in New York State be tested with a battery of tests similar to that used in this study. In this way norms on these tests would be established for deaf children and the performance of any given group of children within the deaf population (such as that group sampled in this study) could be compared with the norms of a deaf population. As a result of such a standardization study, a battery of objective tests and/or teacher rating scales might be developed which would be specifically adequate for evaluating deaf children.

Establishment of a High Risk Registry. The 11 schools for the deaf sampled in this study have a reported total population of 2,199 children (Doctor and Benson, 1966). This study sampled only those children between the ages of 6 and 14 whom the administrators considered to be special. Even within this limited age range, this sample of 193 subjects represents almost 10% of the children in schools for the deaf in New York State. With increased advances in modern medical techniques it can be expected that the number of children with multiple handicaps who reach school age will increase. This fact is especially relevant to educators of the deaf in view of the fact that more than 40% of the subjects in the current study have histories which directly relate to complications during pregnancy or at the time of birth. It has been recommended that there should be a high risk registry at birth for children suspected of having hearing impairment and such registries are currently being established. In addition, it is further recommended that the schools for the deaf, at intake, establish a second high risk registry, based on performance on standardized tests and observation by a professional team, for those children whom they suspect to have additional learning and perceptual disorders, especially those with suspected subnormal intelligence. In this way, these children can not only be identified earlier, but special techniques and specific training procedures can be implemented immediately to deal with the specific deficiencies exhibited. In particular, it would be possible to initiate specific techniques to train memory and perception during the first year of school experience.

Summary

One hundred ninety-three subjects between the ages of 6 and 14 years who were designated by school administrators as exhibiting special communication or special learning problems were selected from 11 schools for the deaf in New York State. Information on etiology, diagnosis, IQ and hearing level was obtained from school records. A battery of tests was selected to tap aspects of memory functions, perceptual ability and certain linguistic abilities. Information on expressive, auditory, and receptive language skills; on emotional, social, classroom, and motor behavior; and on teaching materials and techniques employed was obtained through the use of teacher rating scales and check lists. Information on factors contributing to placement decisions was obtained by means of personal interviews with admissions personnel.

Analysis of information from school records indicated that 73% of the children had known exogenous causes for their handicap, with the largest proportions of these being rubella and prematurity. Diagnostic information extracted from school records proved to be an inadequate means of dealing with the disabilities presented by the subjects.

The nonverbal IQ scores were well below normal range, indicating the existence of widespread mental retardation in the sample. Hearing levels ranged from normal hearing to profound deafness; the majority of the subjects exhibiting severe to profound hearing impairments.

Test results for the entire sample indicated the presence of generalized perceptual and memory deficits, with the lowest scores being obtained on a test involving visual sequential memory. Members of the sample showed an average of two years retardation on tests in the battery. Subjective language evaluation indicated the presence of substantial communication problems, with scores on receptive language being substantially higher than either expressive or auditory receptive language ratings. Language ratings did not improve significantly with increases in chronological age, but correlated positively with scores on memory and perceptual tasks.

More than half of the sample at all age levels were rated by their teachers as exhibiting unsatisfactory emotional adjustment, social adjustment and classroom adjustment. According to teacher reports, symptoms suggesting the Strauss Syndrome were exhibited by more than 60% of the total population. The proportion of the population exhibiting the symptoms of the syndrome did not decrease significantly with increasing chronological age.

Teachers employed a variety of materials and techniques to teach academic subjects and to remediate perceptual, gross motor, and fine motor deficits. The application of special materials designed to remediate specific deficient perceptual and motor skills decreased sharply after children reached ten years of age.

For that portion of the population having nonverbal intelligence scores of 90 or above, performance on perceptual and memory tests, with the exception of memory for visual sequences, was within normal limits. The behavior patterns exhibited by the subsample approximated those of the entire population with the exception of a statistically significant increase in the percentage of subjects exhibiting satisfactory emotional adjustment with increases in chronological age. Language ratings for subjects with normal intelligence showed a significant correlation with chronological age but did not correlate significantly with performance on either the memory or perceptual tasks.

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APPENDIX A1

INFORMATION FROM SCHOOL RECORDS

School____________________ Date of Birth_____________ Sex_____

Name____________________ CA in Mos.________________

I. Diagnostic Information Prior to Admission

	Agency	Type of Agency:	A/O:	Suspect.Etiol.:	Diagnosis:
A.					
B.					
C.					
D.					

II. Diagnostic Information at Time of Intake

Date seen_____ Age of Onset_____ Susp. Etiology___________

Diagnosis______________________ CA in Mos._____________

III. Family

A. History:

Mother No Info. Hearing Hard of Hearing Deaf Deceased

Father No Info. Hearing Hard of Hearing Deaf Deceased

B. Status No Info. Married Separated Divorced Never Married

C. Language No Info. English Spanish Italian Signs Other

IV. Previous Education

	Agency:	Type of Agency:	No. Years Attended: 1 yr. 1-2 yrs. 2 yrs.
A.			
B.			
C.			
D.			

V. Achievement

A. Reading:

Name of Test________________________

Word____________________

Sentence__________________

Paragraph_________________

(Av.) Total_________________

B. Arithmetic:

Name of Test__________________________

Computation_______________

Comprehension_____________

(Av.) Total_______________

C. Date of Test (Rd.)____________ CA in Mos.______________

Date of Test (Arith.)___________ CA in Mos.______________

VI. Audiometrics

First Known: ____ ____ ____

Rt____ISO ASA
Lt____
BB____

Date_____ CA in Mos.__________

Time of Intake: ____ ____ ____

Rt____ISO ASA
Lt____
BB____

Date______ CA in Mos.______

Most Recent: ____ ____ ____

Rt____ISO ASA
Lt____
BB____

Date______ CA in Mos.____

VII. Medical

A. EEG Normal Abnormal No Information

B. Coordination:

1. Gross Motor Normal Abnormal No Information

2. Fine Motor Normal Abnormal No Information

C. Speech:

1. Tongue Control Normal Abnormal No Information

2. Breathing Normal Abnormal No Information

D. Vision Normal Abnormal No Info. Normal w/Correction Abnormal w/Correction

VIII. Psychological

A. Tests:	Earliest	Intake	Most Recent
Name of Test			
Tester			
IQ			
Date/CA in Mos.			

B. Bender (most recent) Normal Mildly Abnormal Abnormal No Info

C. Behavior:	Intake		Most Recent		
	Psychologist	Supvsr or Case Conference	Teacher and/or Spvsr or Anecdotal	Case Conference	Psychologist
rigid					
alert					
perseverative					
bizarre					
hyperactive					

C. (cont.)	Intake		Most Recent		
	Psychologist	Supvsr or Case Conference	Teacher and/or Spvsr or Anecdotal	Case Conference	Psychologist
aggressive	______	______	______	______	______
destructive	______	______	______	______	______
catastrophic reactions	______	______	______	______	______
temper tantrums	______	______	______	______	______
withdrawn	______	______	______	______	______
impulsive	______	______	______	______	______
exc.dpnd.on children	______	______	______	______	______
same/adults	______	______	______	______	______
memory	______	______	______	______	______
prognosis	______	______	______	______	______
low frustration tolerance	______	______	______	______	______
organization	______	______	______	______	______
relates w/adults	______	______	______	______	______
same w/children	______	______	______	______	______
same w/things	______	______	______	______	______
short/poor attention span	______	______	______	______	______

D. Language:	Intake Supervisors	Recent Teacher/Supervisor Date______________ (CA mos.)
1. Receptive		
a. Lipreading (capacity to understand speech)		
1) the child gives little or no attention to speech	______	______
2) has begun to pay purposive attention to speech	______	______
3) attends purposively to speech but shows no evidence of comprehension	______	______
4) understands speech with situational guidance	______	______
5) understands up to 10 words and word phrases	______	______
6) understands up to 50 words and phrases that convey only one idea	______	______
7) understands, chiefly within a concrete concrete context, some comments and statements that convey more than one idea, but not conversation	______	______
8) has begun to understand his parents' conversations (incl. a few questions) about people in the family, things of immediate interest and very recent events; understands several ideas in successive sentences within a non-concrete context	______	______

D. (cont.)	**Intake**	**Recent**
9) understands fairly readily simple conversation, chiefly that of his parents, about familiar people, things, events in everyday life; a fairly wide range of vocabulary over 600 words	______	______
10) understands freely the conversation of his parents and strangers about unfamiliar people, things, events; understands simple stories without visual clues; a wide range of vocabulary, now uncountable	______	______
b. Auditory		
1) no attention to environmental sound	______	______
2) beginning to attend to environmental sounds	______	______
3) attends to environmental sound only	______	______
4) begins to attend to speech sounds	______	______
5) attends to environmental sound and speech sounds	______	______
6) seems to hear speech but does not comprehend	______	______
7) has begun to comprehend speech through audition in context only	______	______
8) comprehension of speech through audition in most situations	______	______

D. (cont.)

2. Expressive

a. Speech

	Intake	Recent
1) the child does not vocalize	____	____
2) vocalizes to a limited extent	____	____
3) vocalizes freely and purposively; perhaps imitates speech	____	____
4) begins to talk spontaneously; uses up to ten words and word phrases	____	____
5) talks fairly freely in words and phrases that express one idea	____	____
6) talks very freely in words and in phrases; begins to express more than one idea	____	____
7) begins to talk in sentences, still sometimes in single words, but usually puts two or three words together to express two or three ideas	____	____
8) begins to express ideas fairly readily in successive phrases and incomplete sentences; few single words used	____	____
9) expresses several ideas in phrases and sentences; frequently and habitually; sentences may be incomplete, but expression through speech is usually an adequate means of communication	____	____

D. (cont.)	Intake	Recent
10) talks in language almost like that of an ordinary child of similar age; describes experiences readily to strangers; asks many questions; expects to be understood	______	______
b. Other		
1) uses gestures only	______	______
2) uses formal sign language	______	______
3) uses neither gestures nor signs	______	______

Comments:

APPENDIX A2

LANGUAGE RATING SCALES

A. The scale below describes stages in the development of receptive language skills.

For the child(ren) listed below please indicate the number of the level which best characterizes his receptive language facility at this time.

1. the child gives little or no attention to speech
2. has begun to pay purposive attention to speech
3. attends purposively to speech but shows no evidence of comprehension
4. limited comprehension of speech with situational guidance only
5. understands up to 10 words and word phrases
6. understands up to 50 words and phrases that convey only one idea
7. understands, chiefly within a concrete context, some commands and statements that convey more than one idea, but not conversation
8. has begun to understand classroom conversation (including a few questions) about things of immediate interest and very recent events; understands several ideas in successive sentences within a non-concrete context
9. understands fairly readily simple conversation, about familiar people, things, events in everyday life; a fairly wide range of vocabulary
10. understands freely the conversation of familiar people and strangers about unfamiliar people, things, events; understands simple stories without contextual clues; a wide range of vocabulary, now uncountable.

1. ______________________________ is at level ________.

2. ______________________________ is at level ________.

3. ________________________________ is at level _______.

4. ________________________________ is at level _______.

5. ________________________________ is at level _______.

6. ________________________________ is at level _______.

7. ________________________________ is at level _______.

8. ________________________________ is at level _______.

B. The scale below describes stages in the development of oral expressive language (speech).

For the child(ren) listed below please indicate the number of the level which best characterizes his speech behavior at this time.

1. the child does not vocalize
2. vocalizes to a limited extent
3. vocalizes freely and purposively; perhaps imitates speech
4. begins to talk spontaneously; uses up to 10 words and word phrases
5. talks fairly freely in single words and may sometimes combine words to express an idea
6. talks very freely in words and in phrases
7. begins to talk in sentences, may still use single words or two or three word units to express ideas
8. begins to express ideas fairly readily in successive phrases and incomplete sentences; few single words used
9. expresses several ideas in phrases and sentences, frequently and habitually; sentences may be incomplete, but expression through speech is usually an adequate means of communication
10. talks in language almost like that of an ordinary child of similar age; describes experiences readily to strangers; asks many questions; expects to be understood

1. ___________________________________ is at level _______.

2. ___________________________________ is at level _______.

3. ________________________________ is at level _________.

4. ________________________________ is at level _________.

5. ________________________________ is at level _________.

6. ________________________________ is at level _________.

7. ________________________________ is at level _________.

8. ________________________________ is at level _________.

C. The scale below describes stages in ability to benefit from use of audition in language learning.

For the child(ren) listed below, please indicate the number of the level which best characterizes his auditory behavior.

1. no attention (or response) to environmental sounds
2. beginning to attend to environmental sounds
3. attends mainly to environmental sounds
4. seems to hear speech but shows no evidence of speech comprehension
5. beginning to differentiate speech sounds from environment
6. attends to both environmental sounds and speech sounds directed towards him
7. beginning to comprehend speech through audition in context only, with or without amplification
8. comprehension of speech through audition in most situations with amplification
9. comprehension of speech through audition in most situations without amplification
10. shows no evidence of auditory disturbance - has normal hearing.

1. ______________________________ is at level _________.

2. ______________________________ is at level _________.

3. ______________________________ is at level ______.

4. ______________________________ is at level ______.

5. ______________________________ is at level ______.

6. ______________________________ is at level ______.

7. ______________________________ is at level ______.

8. ______________________________ is at level ______.

APPENDIX A3

BEHAVIOR CHECK LIST

Child's Name:______________________________________

Please answer the questions below for the child whose name appears at the top of the page.

1. This child is generally an emotionally stable child: YES ☐ NO ☐

   If no - please check the item(s) below which led you to conclude that the child is emotionally unstable. Feel free to add any additional behaviors that you feel are relevant.

___ a. indulges in escapist techniques (i.e., feigns illness)

___ b. withdrawn, "in his own world"

___ c. extreme recations on slight provocations (i.e., temper tantrums or prolonged sulking)

___ d. bizarre behavior

___ e. oversensitive to frustration or criticism

___ f. lethargic, overly passive

___ g. highstrung, must be constantly "on the go"

___ h. shows little or no capacity for love or hate

___ i. has extreme fluctuations in mood without apparent external cause

___ j. exhibits nervous reactions (i.e., nail biting, hair twisting, thumb or finger sucking, biting, scratching, twitching)

___ k. compulsive behavior

___ l. unusual fears

Other:

___ m.

___ n.

___ o.

___ p.

___ q.

	YES	NO
2. This child's social behavior is generally acceptable:	☐	☐

If no - please check the items below which led you to conclude that the child is emotionally unstable. Feel free to add any additional behaviors that you feel are relevant.

___ a. aggressive towards peers (antagonizes others)

___ b. aggressive towards children younger than self

___ c. aggressive towards adults (i.e., defies authority)

___ d. excessive dependency on adults

___ e. is unable to take care of his own physical needs

___ f. does not respect others property

___ g. is painfully self-conscious

___ h. is not accepted by his peers

___ i. is overly dependent on the opinion of others (i.e., does not assert self)

___ j. cheats

___ k. lies

___ l. steals

___ m. prefers company of younger children

Other:

___ n.

___ o.

___ p.

___ q.

___ r.

	YES	NO
3. This child's classroom behavior (motivation, interest, general learning) is good to average:..................	☐	☐

If no - please check the items below which led you to conclude that the child is emotionally unstable. Feel free to add any additional behaviors that you feel are relevant.

___ a. excessively hyperactive

___ b. cannot sustain attention

___ c. extremely limited memory

___ d. perseverative

___ e. little or no progress evident

___ f. shows little or no interest in class work

___ g. cannot follow directions

___ h. needs much structure to function effectively, disorganized

___ i. unable to work independently

___ j. culturally deprived (little or no family stimulation)

Other:

___ k.

___ l.

___ m.

___ n.

___ o.

	YES	NO
4. This child's motor behavior is appropriate for his age:	☐	☐

If no - please check the items below which led you to conclude that the child's motor behavior is below age level. Feel free to add any additional behaviors you feel are relevant.

___ a. grossly incoordinated, clumsy

___ b. poor eye-hand coordination

___ c. has difficulty with athletic activities

___ d. easily fatigued

___ e. mixed handedness

___ f.

___ g.

___ h.

___ i.

___ j.

APPENDIX A4

MATERIALS AND TECHNIQUES

Child's Name_________________________ Teacher's Name__________________

We are interested in the types of materials (both commercial and teacher-made) and teaching techniques which are used in classes for children with special language problems, and in determining the extent to which they may have proven useful.

Please answer the questions below as they relate to the child named above.

1. Do you use one or more commercial reading series with this pupil? Yes___ No___

   List the names of the series in the order of frequency of use with this pupil (e.g., Ginn, Scott Foresman, S.R.A., MacMillan, etc.).

   a. Series Level

   _____________________ _____________________ Text___ Workbook___

   *For this child the Material:

is Extremely Useful	has Limited Effectiveness	is Not Useful

   b. Series Level

   _____________________ _____________________ Text___ Workbook___

   *For this child the material:

is Extremely Useful	has Limited Effectiveness	is Not Useful

   c. Series Level

   _____________________ _____________________ Text___ Workbook___

   *For this child the material:

is Extremely Useful	has Limited Effectiveness	is Not Useful

   d. Series Level

   _____________________ _____________________ Text ___ Workbook___

   *For this child the material:

is Extremely Useful	has Limited Effectiveness	is Not Useful

*PLEASE NOTE: On all scales, on this and successive pages, please indicate your estimate of effectiveness by a perpendicular slash through the line.

2. Do you use one or more commercial math series with this pupil?
Yes___ No___

List the name of the series and the levels in order of frequency of use with this pupil.

a. Series Level

______________________ ___________________ Text___ Workbook___

For this child the material:

is Extremely Useful	has Limited Effectiveness	is Not Useful

b. Series Level

______________________ ___________________ Text___ Workbook___

For this child the material:

is Extremely Useful	has Limited Effectiveness	is Not Useful

c. Series Level

______________________ ___________________ Text___ Workbook___

For this child the material:

is Extremely Useful	has Limited Effectiveness	is Not Useful

d. Series Level

______________________ ___________________ Text___ Workbook___

For this child the material:

is Extremely Useful	has Limited Effectiveness	is Not Useful

3. Do you use commercially available materials other than texts and workbooks to aid in the teaching of arithmetic to this pupil?
Yes___ No___

Several such materials are listed below. Please check those which you use with this pupil and feel free to add any others which you may employ, whether commercially available or teacher-made.

For this pupil the material:

Cuisenaire: ____
is Extremely Useful — has Limited Effectiveness — is Not Useful

Stern Materials; ____
is Extremely Useful — has Limited Effectiveness — is Not Useful

Montessori: ____
is Extremely Useful — has Limited Effectiveness — is Not Useful

Other:

______________: ____
is Extremely Useful — has Limited Effectiveness — is Not Useful

______________: ____
is Extremely Useful — has Limited Effectiveness — is Not Useful

______________: ____
is Extremely Useful — has Limited Effectiveness — is Not Useful

______________: ____
is Extremely Useful — has Limited Effectiveness — is Not Useful

______________: ____
is Extremely Useful — has Limited Effectiveness — is Not Useful

4. Below is a list of materials and techniques often employed for perceptual training. Please check each material or technique which you use with this pupil and indicate its appropriateness for him. Feel free to add any other materials or techniques which you employ, or which you made yourself.

For this child the material:

☐ Tracking objects (flashlight beams, pencils, etc.): ______________________
is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Figure-ground exercises: ______________________
is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Copying letters, numbers or forms: ______________________
is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Matching (object to object; object to picture, picture to picture): ______________________
is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Sorting objects (according to similarity of color, shape or function): ______________________
is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Coloring: ______________________
is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Tracing: ______________________
is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Form Boards: ______________________
is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Picture Puzzles: ______________________
is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Mazes: ______________________
is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Other
______________________: ______________________
is Extremely Useful — has Limited Effectiveness — is Not Useful

5. Below is a list of materials often employed for teaching gross motor skills. Please wheck each material or technique which you employ with this pupil. Feel free to indicate any other methods or materials which you employ with this pupil, including those you created yourself.

For this child:

☐ Crawling and Creeping: (Mat Work)	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Walking (incl. stairs and ladders):	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Balancing (e.g., Heath Rails):	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Jumping (incl. Jump-rope):	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Hopping:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Skipping:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Throwing a ball:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Catching a ball:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Obstacle Course:	is Extremely Useful	has Limited Effectiveness	is Not Useful
Other:			
____________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful
____________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful
____________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful

6. Below is a list of techniques sometimes employed in teaching fine motor skills. Please indicate which of these techniques you employ with this pupil. Feel free to add any others you may also use with this pupil, including those you thought of yourself.

For this child:

☐ Cutting:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Coloring within lines:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Tracing:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Sewing:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Typing:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Pegboards:	is Extremely Useful	has Limited Effectiveness	is Not Useful
Other:			
____________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful
____________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful
____________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful
____________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful
____________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful

7. Tactile Perception

☐ Form discrimination of object:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Identifying an object by touch:	is Extremely Useful	has Limited Effectiveness	is Not Useful
Other:			
______________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful
______________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful

8. Below is a list of commonly used techniques which may form the basis of a program of perceptuo-motor training. Please check, on the list below, any of these methods which you have employed with this pupil during this year. Feel free to add any others you may also use with this pupil, including those you thought of yourself.

For this child:

☐ Montessori material:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Frostig material:	is Extremely Useful	has Limited Effectiveness	is Not Useful
☐ Kephart technique:	is Extremely Useful	has Limited Effectiveness	is Not Useful
Other:			
______________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful
______________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful
______________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful
______________________:	is Extremely Useful	has Limited Effectiveness	is Not Useful

9. Below is a list of commonly used methods of teaching language to hearing-impaired children. Please check any method which you employ with this child.

For this child:

☐ Fitzgerald Key: ________________

is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ McGinnis ________________

is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Natural Language: ________________

is Extremely Useful — has Limited Effectiveness — is Not Useful

☐ Hortense Barry: ________________

is Extremely Useful — has Limited Effectiveness — is Not Useful

Other:

________________: ________________

is Extremely Useful — has Limited Effectiveness — is Not Useful

________________: ________________

is Extremely Useful — has Limited Effectiveness — is Not Useful

________________: ________________

is Extremely Useful — has Limited Effectiveness — is Not Useful

________________: ________________

is Extremely Useful — has Limited Effectiveness — is Not Useful

(Teacher's) Name____________________ Date________________

Number of children in your class (home room): Boys____ Girls____

Age of youngest child (in years): __________

Age of oldest child (in years): __________

Are all the children in your class considered 'special'? Yes____ No____

Classroom Setting:

Please check one item in each category below which best describes the arrangement of your classroom.

Children's Desks:

_____ horseshoe

_____ rows

_____ horizontal

_____ variable, usually __________

_____ other (please draw or explain)

Teacher's Desk:

_____ front of children

_____ back of children

_____ side of children

_____ none

_____ variable, usually __________

_____ other

Screens:

_____ movable

_____ non-movable

_____ absent

_____ other

APPENDIX A5

INTERVIEW: INTAKE WORKER

School:____________________ Date:__________________________

Interviewee:________________ Interviewer:______________________

Position:____________________

As you know we are concerned with the problem of dealing with deaf children with additional problems in communication, primarily those who are placed in special classes. I understand your school makes some provision for such children? Pause

We recognize them, but place them in regular classes. Probe: To see if they are given special help in the regular classes.

Probe: What sort of special training are they likely to receive?

We have formal classes in which they are placed. Probe: What is the composition of these classes, generally?

We are especially interested in how and when your staff makes the decision that a certain child would benefit from special training. I understand that you are the recorder for the intake team. Pause

In general, how are children selected for special class placement? By referrals? Probe: Exclusively?

By Intake Team (including titles and other functions)? Probe: For composition of members?

It depends on the child. Probe: How do you mean that? (If answered by behavioral manifestations - Probe: To determine how and when these are assessed.)

(If assessed in special class - Probe: For how he got there in the first place.)

After ______ number of months of diagnostic teaching, decision is made.

INTAKE: What intake information is routinely obtained for all incomers?

Would additional info. be obtained during intake procedures on "special" children?

What info.?

When and how decided?

Probe: For extent of reliance upon referral data.

Further - are there agencies whose records are given greater weight in decision for placement?

We've been talking about Intake Procedures. I'd now like to ask about In-School Transfers.....

Are children ever transferred to special classes after they have been attending regular classes in your school?

No Rarely

Sometimes- If Yes, on what basis decision made?

Re staffing - Probe: Exclusively?

Some Staff?

When?

How Long?

(If "Depends on Child" - Hold - Probe: For general modus operandi)

As above:

If Teacher-Supervisor: What are her (their) general reports/ impressions that result in transfer?

If Language-Learning Problems mentioned - Probe: For how determined, how phrased, how observed, etc.

If Behavior Problems mentioned - Probe: As above.

Are decisions ever made to transfer a child in a special class to regular classes?

For the hearing?

For the hard of hearing?

For the deaf?

Other?

On what basis and by whom?

I think that just about covers my questions. Have I possibly omitted anything that you think should be included?

Oh, one more thing. What sort of curriculum is followed in the special classes?

Special Supervisor knows more about it.

Left to teacher, mainly.

Depends on child. Probe

Special techniques used. Probe

How successful would you say your program is for the special child? Why? Probe: For "Success" definition.

Do you have any copies of intake and other forms that you can spare? THANKS.

APPENDIX B

TEST PROCEDURES

Procedures for the Administration of the Raven's Progressive Matrices

The test booklet was opened to the first pattern, A1, and the entire pattern was outlined by a sweep of the hand. The child's attention was drawn to the missing piece by pointing to the space in the pattern. Following the instructions in the manual (Raven, 1958) choices one, two, three and six were successively pointed to, and the examiner shook his head to indicate that they were incorrect choices. All of the choices were then pointed to by a sweep of the hand, followed by gestures and facial expression to indicate that the child was to choose the design which completed the pattern. If the child chose the correct design, pattern A2 was revealed, the space in the pattern was pointed to, and the child was expected to choose the correct design. If the child made an incorrect choice on any of the first three patterns, the above procedures were repeated. When the child responded to patterns A4 and A5, the examiner, with a questioning expression, pointed from the child's choice to the missing space, to ascertain whether the child was sure of his response. After the fifth pattern, the child was expected to proceed independently. If at any time during the testing the child changed his mind, the examiner pointed back and forth from the second choice (regardless of correctness) to the missing space to check for surety.

If at any point between design A1 and A5, the examiner felt that the child did not understand the task, two procedures were followed. First, the procedures described above were repeated beginning with pattern A1. If the child still did not appear to understand the task, a cardboard cutout of the correct choice for pattern A1 was placed under the choice in the booklet and then in the missing space to complete the pattern. The child's attention was drawn to the fact that the cut-out was identical to choice Number Four, and then to the complete pattern with the cut-out inserted. In all but three cases, this procedure enabled the examiner to proceed with the test confident that the child understood the task.

The procedures for sets Ab and B were similar to those outlined above. In accordance with the instructions in the manual, surety of response was checked for patterns one through five in each set.

The test was terminated after sets A, Ab and B were administered, regardless of the adequacy of the child's performance. No time limit was imposed for this test.

Modified Nonverbal Procedures for Administration of the Stencil Design Test

The cards were arranged in accordance with the instructions in the Manual (Grace Arthur, 1947). The child's attention was drawn, through gesture, to the white center of the sample design card, after which the solid white colored card was placed in front of the subject. Similarly, the red border on the sample design card was outlined with the index finger. The appropriate red stencil card was then outlined and placed on top of the solid white card. The examiner outlined the two parts of both the completed design and the sample design, drawing the child's attention to the similar white centers and the red borders. At this point, the child and/or the examiner indicated that the two patterns were the same. The examiner then replaced the colored stencils in their original positions. Leaving the sample design card in front of the child, the examiner pointed first to the card and then to the child, indicating that he was to make the design himself. The child was encouraged, through pantomime, to make the edges even and to place his completed design in front of the sample. Mere holding up of the completed design was not permitted. Time was recorded when the child indicated that he had completed the design. If the design was correctly completed, Design I was placed in front of the child. If the design was incorrectly completed, a failure was recorded and the procedures outlined above were repeated until the examiner was satisfied that the child understood the task. Subsequent procedures were identical to those indicated to the Manual.

Nonverbal Procedures for Administration of ITPA

Visual Decoding. The test booklet was placed in front of the child and the demonstration item, a picture of a shoe, was revealed for five seconds. The examiner then turned the page to display pictures of a shoe, a car, a gun and a doll; and with a sweeping hand motion and a questioning expression, indicated that the child was to find the picture that was similar to the shoe. If the child chose the correct picture, demonstration item IIa was revealed and similar procedures were followed. If the child did not understand the demonstration item, the examiner re-exposed the stimulus picture and choices simultaneously, and indicated that the child was to find the picture that was the same. After the demonstration items, the stimulus pictures were revealed for five seconds and the child was expected to indicate his choice by pointing to the correct picture. Testing was terminated when six of any eight consecutive items were failed or when the end of the test was reached.

Motor Encoding. The examiner handed the demonstration item, a toy hammer, to the child and assumed a questioning expression to indicate that the child was to pantomime how the item was used. If the child did not know what to do with the hammer, the examiner demonstrated the appropriate action and then indicated that the child was to do the same thing. Testing was not begun until the child had demonstrated the correct use of the hammer. If the child correctly banged the hammer, the examiner proceeded to hand the child the first test item, the toy gun. The fourth item and all subsequent items of the test consisted of pictures. The child was expected to demonstrate through pantomime appropriate actions for each pictured item. In cases where children named the picture, the examiner indicated, through gesture, that the child was not to speak but was to demonstrate, through pantomime, the use of the object. No further assistance was given. Since there is no ceiling on this test, the entire test was administered to all subjects. The test was scored according to criteria set forth in the manual.

Visual Motor Sequencing. A 9¼" x 2" rectangular tray, included in the test kit, was placed in front of the child. For the demonstration item, two picture chips were placed on the tray for five seconds. The child's attention was drawn, through pointing from left to right, to the sequence of the pictures. The examiner then dumped out the chips and pointed to the child to indicate that he was to place them back in the tray in the same order as he had seen them. If the child responded incorrectly, the same sequence was displayed again.

Despite provisions in the manual for establishing a basal age, it was decided that all of the picture sequences would be used in order to assure that the subject understood the task. Following three picture series, sequences of geometric shapes were shown. As provided in the manual each sequence was repeated if the child failed to duplicate it correctly the first time. No indication of success or failure was made by the examiner. Testing was terminated when six consecutive trials were failed or when the child had completed all the sequences in the test.

Visual Motor Association. The test booklet was placed in front of the child and demonstration item II was revealed. In this item, a shoe is pictured on one side and a ball and sock on the other. The examiner covered the response choices with one hand and pointed to the shoe with the other. The examiner then revealed the choices and pointed back and forth from the shoe to the sock, and then from the shoe to the ball, indicating that the child was to choose the item that was associated with the shoe. Testing continued until the entire test was administered or until the child had failed six out to eight consecutive items.

APPENDIX C

Table 1. Intercorrelations Among Tests Administered.

	Ravens A	Ravens Ab	Ravens B	Ravens Total	Knox Cube	Stencil Design	Visual Decoding	Motor Encoding	Visual Motor Sequencing	Visual Motor Association
Ravens A		.6420	.6053	.8286	.5047	.5753	.5570	.5291	.4633	.3638
Ravens Ab			.7074	.9118	.5381	.5848	.4858	.4845	.4603	.4277
Ravens B				.8838	.4959	.6078	.4154	.4085	.4619	.3668
Ravens Total					.5842	.6742	.5491	.5367	.5248	.4423
Knox Cube						.4993	.3764	.4514	.5113	.3297
Stencil Design							.4785	.4301	.4033	.3723
Visual Decoding								.5201	.4497	.5127
Motor Encoding									.3403	.3593
Visual Motor Sequencing										.3902
Visual Motor Association										

APPENDIX D1

Table 1. Gross Motor Activities by Age Range(N=193).

	Age Range					
	6-8		9-11		12-14	
	N	%	N	%	N	%
Activities	(N=68)		(N=71		(N=54)	
Creeping and Crawling	20	29.4	4	5.6	5	9.2
Walking	36	52.9	12	16.9	6	11.1
Balancing	42	61.8	11	15.5	7	13.0
Jumping	44	64.7	30	42.2	16	29.6
Hopping	45	66.2	21	29.6	12	22.2
Skipping	45	61.8	22	31.0	12	22.2
Throwing a Ball	48	70.6	33	46.5	13	24.1
Catching a Ball	48	70.6	33	46.5	13	24.1
Obstacle Course	14	20.6	9	12.7	5	9.2
Walking Mazes	2	2.9				
Self-Testing Stunts					1	1.8
Weight Training					2	3.7
Rhythm Program	3	4.4	1	1.4		
Racing	5	7.4				
Rope Climbing	5	7.4				
Galloping	3	4.4				
Swinging Arms	4	5.9				
Marching	4	5.9				
Sliding	3	4.4				
Climbing	3	4.4				

(continued)

Table 1. (continued

Activities	Age Range 6-8 N	 % (N=68)	 9-11 N	 % (N=71)	 12-14 N	 % (N=54)
Bending	3	4.4				
Dancing	2	2.9	6	8.5		
Bouncing a Ball	5	7.4				
Gym Scooter	5	7.4				
Phys. Ed. Ex.	2	2.9				
Dart Throwing			4	5.6	2	3.7
Bowling Game			4	5.6	2	3.7
Swings-Playground			2	2.8	1	1.8
Sports: Baseball, Basketball			3	4.2	1	1.8
Gym Activities	4	5.9	6	8.5	2	3.7
Imitating a Leader	3	4.4				

APPENDIX D2

Table 2. Fine Motor Skills by Age Range(N=193).

	Age Range					
	6-8		9-11		12-14	
	N	%	N	%	N	%
Activities	(N-68)		(N=71)		(N=54)	
Cutting	62	91.2	44	62.0	16	29.6
Puzzles	1	1.5				
Coloring Within Lines	52	76.5	30	42.2	9	16.7
Hole Punch	1	1.5				
Tracing	39	57.4	30	42.2	11	20.4
Hammering	1	1.5				
Sewing	15	22.0	24	33.8	13	24.1
Art	2	2.9	5	7.0	1	1.8
Typing	3	4.4			3	5.6
Clay	3	4.4				
Pegboards	23	33.8	3	4.2	3	5.6
Stringing Beads	2	2.9				
Knitting			4	5.6	2	3.7
Weaving	2	2.9	1	1.4		
Pasting	8	11.7	7	9.9		
Buttoning	5	7.4				
Lacing	4	5.9	3	4.2		
Snapping	3	4.4				
Buckling	4	5.9				
Zippering	4	5.9				

(Continued

Table 2 (continued

Activities	Age Range					
	6-8		9-11		12-14	
	N	%	N	%	N	%
	(N=68)		(N=71)		(N=54)	
Continental Press I and II	2	2.9				
Teacher Made	1	1.5				
Continental Press I	1	1.5				
Block Design			1	1.4		
Painting			4	5.6	3	5.6
Jacks			3	4.2	1	1.8
Pick-Up Sticks			2	2.8	1	1.8
Picking Up Small Objects			1	1.4		
Writing			1	1.4		
Shop Tools			2	2.8	1	1.8
Following Numbered Pictures					1	1.8
Craft Projects			1	1.4	1	1.8
Marbles			1	1.4		
Fingerplay	2	2.9				
Eye Hand Coordination	2	2.9				
Copying			1	1.4		

APPENDIX D3

Table 3. Perceptual Training - Teacher Materials by Age Range (N=193).

Activities	6-8 N	6-8 %	9-11 N	9-11 %	12-14 N	12-14 %
	(N=68)		(N=71)		(N=54)	
Tracking	22	32.3	8	11.3	4	7.4
Figure-Ground	36	52.9	20	28.2	8	14.8
Copying Letters and Numbers	55	80.9	36	50.7	16	29.6
Matching	39	57.3	32	45.1	13	24.1
Sorting	37	54.4	26	36.6	13	24.1
Coloring	43	63.2	36	50.7	13	24.1
Tracing	33	48.5	29	40.8	14	25.9
Form Boards	30	44.1	11	15.5	6	11.1
Puzzles	48	70.6	36	50.7	15	27.8
Mazes	24	35.3	18	25.4	5	9.2
Fitzhugh Plus Program	1	1.5	1	1.4		
Games Using Objects			1	1.4		
Sense-Training Memory			1	1.4		
Commercial Games			1	1.4		
Clay	3	4.4	1	1.4		
Teacher-Made Materials	1	1.5				

APPENDIX D4

Table 4. Tactile Perception - Teacher Materials by Age Range (N=191).

	Age Range					
	6-8		9-12		12-14	
Activities	N (N=66)	%	N (N=71	%	N (N=54)	%
Form Discrimination of Objects	52	78.8	29	40.8	12	22.2
Identifying Objects by Touch	42	63.6	33	46.5	12	22.2
Size Discrimination	10	15.2				
Depth Discrimination	2	3.0				
Soft and Hard Discrimination	3	4.5	1	1.4		
Texture Discrimination	4	6.1				
Taction for Speech Correction			1	1.4		

APPENDIX D5

Table 5. Perceptuo-Motor Training by Age Range (N=193).

Materials	Age Range 6-8 N	 %	 9-11 N	 %	 12-14 N	 %
	(N=68)		(N=71)		(N=54)	
Montessori	27	39.7	7	9.9	1	1.8
Frostig	27	39.7	12	16.9	5	9.2
Kephart	14	20.6	4	5.6	3	5.6
Continental Press I	3	4.4				
Continental Press II	1	1.5				
Cruickshank-A Teaching Method For Brain-Injured Children	2	2.9				
Tracing of Letters			1	1.4		
Fitzhugh Plus	5	7.4				
Body Imagery			5	7.0		
Teacher-Made			1	1.4		
Hortense Barry	4	5.9	1	1.4		
Sequence Picture and Sizes			1	1.4		
Flannel Board			1	1.4		

APPENDIX D6

Table 6. Language Activities by Age Range .(N=193).

	Age Range					
	6-8		9-11		12-14	
	N	%	N	%	N	%
Activity	(N=68)		(N=71)		(N=54)	
Action Work					3	5.6
Charts					3	5.6
Croker, Jones and Pratt			5	7.0	1	1.8
Crosswork Puzzles			2	2.8	1	1.8
Diagrams					3	5.6
Fitzhugh	1	1.5	1	1.4		
Inductive Approach					1	1.8
Junior Scrabble			2	2.8		
Matching Pictures to Objects and Words	1	1.5				
Matching Words to Pictures			1	1.4		
Music	4	5.9				
Picture Lotto			1	1.4		
Poems	1	1.5				
Second Language Teaching Method	5	7.4				
Tinsmith Workbook			3	4.2		

APPENDIX D7

List of Materials Used for Teaching Arithetic.

Abacus
Beads
Clocks
Colorful Picture Books for Numbers
Concrete Objects
Counting Blocks
Counting Discs
Counting Frame
Dominoes
Educational Toys
Filmstrips
Flannel Board
Flashcards
Instructor - Arithmetic, Vocabulary Charts
Instructor - Number, Concepts Charts
Instructor - Time Teacher
Milton Bradley - Materials and Devices
Milton Bradley - 100's Chart
Money
Number Line
Number Sticks
Number Stories
Overhead Projector
Rulers
Sense Training (Presented by Games)
Teacher - Made Dittoed Worksheet
Tens and Ones Chart

APPENDIX E1

Table 1. Emotional Behavior by Age Range.

	Age Range							
	6-8		9-11		12-14		Total	
	N	%	N	%	N	%	N	%
	(N=66)		(N=70)		(N=52)		(N=188)	
Satisfactory	25	37.9	30	45.5	26	50.0	81	43.1
Escapist	6	9.1	13	18.6	6	11.5	25	13.3
Withdraws	18	27.3	18	25.7	15	28.8	51	27.1
Tantrums	23	34.8	30	45.5	12	23.1	65	34.6
Bizarre	15	22.7	12	17.1	7	13.5	34	18.1
Oversensitive	24	36.4	28	40.0	15	28.8	67	35.6
Lethargic	6	9.1	13	18.6	9	17.3	28	14.9
Overactive	17	25.8	14	20.0	8	15.4	39	20.7
No Capability for Love or Hate	3	4.5	6	8.6	3	5.8	12	6.4
Mood Fluctuations	9	13.6	10	14.3	6	11.5	25	13.3
Nervous	26	39.4	17	24.3	10	19.2	53	28.2
Compulsive	21	31.8	20	28.6	9	17.3	50	26.7
Fears	2	3.0	6	8.6	3	5.8	11	5.9

APPENDIX E2

Table 2. Social Behavior by Age Range.

	Age Range							
	6-8		9-11		12-14		Total	
	N	%	N	%	N	%	N	%
	(N=66)		(N=70)		(N=52)		(N=188)	
Satisfactory	30	45.5	34	48.6	19	28.8	83	44.1
Aggressive toward Peers	18	27.3	18	25.7	12	23.1	48	25.5
Aggressive toward Younger children	8	12.1	7	10.0	10	19.2	25	13.3
Aggressive toward Adults	15	22.7	14	20.0	8	15.4	37	19.7
Dependent on Adults	12	18.2	14	20.0	8	15.4	34	18.1
Unable to take Care of own needs	2	3.0	1	1.4	3	5.8	6	3.2
Doesn't respect others property	13	19.7	5	7.1	3	5.8	21	11.2
Self-Conscious	3	4.5	6	8.6	7	13.5	16	8.5
Not accepted by Peers	9	13.6	11	15.7	13	25.0	33	17.6
Overly dependent on opinion of others	9	13.6	19	27.1	9	17.3	37	19.7
Cheats	5	7.6	5	7.1	2	3.8	12	6.4
Lies	9	13.6	9	12.9	7	13.5	25	13.3
Steals	3	4.5	4	5.7			7	3.7
Prefers company of younger child	4	6.1	2	2.9	4	7.7	10	5.3
Other			1	1.4	1	1.9	2	1.1

APPENDIX E3

Table 3. Classroom Behavior by Age Range.

	Age Range							
	6-8		9-11		12-14		Total	
	N	%	N	%	N	%	N	%
	(N=66)		(N=70)		(N=52)		(N=188)	
Satisfactory	23	34.8	25	35.7	15	28.8	63	33.5
Excessively Hyperactive	17	25.8	9	12.9	5	9.6	31	16.5
Cannot sustain Attention	32	48.5	21	30.0	12	23.1	65	34.6
Extremely limited memory	24	36.4	21	30.0	11	21.2	56	29.8
Perseverative	10	15.2	10	14.3	4	7.7	24	12.8
Little or no Progress evident	12	18.2	15	21.4	11	21.2	38	20.2
Little or no Interest in Classwork	10	15.2	10	14.3	2	3.8	22	11.7
Cannot follow Directions	16	24.5	13	18.6	4	7.7	33	17.6
Disorganized, Needs structure	26	39.4	29	41.4	17	32.7	72	38.3
Unable to work Independently	20	30.3	11	15.7	5	9.6	36	19.1
Culturally deprived	11	16.7	9	12.9	9	17.3	29	15.4
Other	2	3.0					2	1.1